Exploring the Use of Key Performance Indicators to Influence Nursing and Midwifery Practice.

Olivia Mary Elizabeth Gray

MSc, BSc (Hons)

Ulster University

Faculty of Life and Health Sciences

Institute of Nursing and Health Research

Thesis submitted for the degree of Doctor of Philosophy

February 2018

I confirm that the word count of this thesis is less than 100,000

Funded by: Department for Employment and Learning

Belfast Health and Social Care Trust

Contents

List of Tables

List of Figures

List of Appendices

Acknowledgements

As I think back on my journey over the past three years I realise that, although a PhD is by its unique nature a very solitary pursuit, I have had the pleasure of engaging with some fantastic people who have all made my efforts so worthwhile.

- To my supervisors, Tanya McCance, Donna Brown and Christine Boomer, thank you for making me reach beyond what I thought I could achieve and for doing so in such a way that I felt your care and concern. Your patience and guidance have truly enriched my experience and enhanced this study. Donna, my facilitator and friend on many voyages of discovery over the years, thank you for the words of encouragement and always convincing me that I could do this.
- My heartfelt thanks to my local collaborators and participants across the UK, Republic of Ireland and Australia. Without you this endeavour would never have succeeded. I was made to feel so very welcome by everyone. I hope you can see your efforts reflected in this thesis.
- Thank you to my colleagues in the Belfast Trust who supported my secondment - Elish MacDougal, you are a star! Moira Kearney, you took a risk and set me on this path of learning many years ago. Thank you.
- A word of thanks must also go to the Royal College of Nursing and the Florence Nightingale Foundation for their funding awards and practical support.
- Fellow PhD students: who knew Northern Ireland was such a hub of international activity? We have laughed, we have cried, we have shared the highs and the lows. Long live Percy Pigs and coffee. Too many to name but every one a gem.
- To the research teams across each country, thank you for guiding me through the various processes. Your support and willingness to help kept me sane.
- Finally, but most importantly, to my family. Mum, you let me get on with it and never grumbled about our lack of time together: love always. Barry, Philip, Laura and Christopher, for putting up with a distracted and sometimes missing wife and mother, my thank you is simple but written with great love. I am proud of how you have coped with the disruption to your lives; thanks for supporting me and giving me the space to get on with it. Barry, proof-reader extraordinaire and my unwavering supporter, you made me pause and refocus on what is important in life. Thank you, with much love.

Summary

Internationally, the use of Key Performance Indicators (KPI's) in nursing and midwifery is recognised as a reliable and accurate means of measuring and reporting on practice. The use of KPI's should lead to safe, high-quality care. However, there is little evidence of how KPI's influence decisions throughout organisations, or how they act on the data collected.

Aim: To scope the KPI's used in nursing and midwifery and explore how they influence practice.

Methodology: A two-phased sequential mixed methods approach was chosen. Phase one involved a questionnaire disseminated across the United Kingdom and Republic of Ireland. Phase two consisted of interviews conducted at meso and micro levels of nursing and midwifery in eight organisations.

Results: Quantitative data revealed over 100 nursing and midwifery specific KPI's being used in practice. National requirements were a deciding factor in KPI selection, while clinical involvement was mainly through data collection. Respondents stated that they used patient experience KPI's, but only one measure was identified. Thematic analysis identified two themes: The Leadership Challenge including - 'voiceless in the national conversation', 'aligning KPI's within the practice context' and 'listening to those who matter', while Taking Action includes - 'establishing ownership and engaging staff', 'checks and balances' and 'closing the loop'.

Conclusion: Nurses and midwives require enhanced knowledge of the nature and purpose of KPI's, as evidence gained from KPI data collection is insufficient to lead to improvement. A practice context which encourages collective leadership, where multiple sources of evidence are gathered and everyone is included in KPI evaluation and subsequent decision-making is key. It is suggested that implementation science, in general, and the Promoting Action on Research Implementation in Health Services Framework, offer effective tools for successfully realising KPI's potential to activate and sustain improvements in practice.

Abbreviations

ANA	American Nurses Association
BMI	Body Mass Index
CA	Clinical Acute Nurse
CC	Community Nurse
C. Diff	Clostridium Difficile
CM	Clinical Midwife
CNO	Chief Nursing Officer
DNA	Did Not Attend
DoH	Department of Health
DoN	Director of Nursing/Chief Nurse
ED	Emergency Department
FFT	Family and Friends Test
HCA	Healthcare Assistant
HCAI/HAI	Health Care Acquired Infections
HIQA	Health Information and Quality Authority
ICNARC	Intensive Care National Audit and Research Centre
IHI	Institute for Healthcare Improvement
IoM	The Institute of Medicine
IT	Information Technology
IV	Intravenous
KPI	Key Performance Indicator
MLU	Midwife Led Unit
MRSA	Methicillin-resistant Staphylococcus Aureus
MUST	Malnutrition Universal Screening Tool
NDNQI	National Database of Nursing Quality Indicators
NEWS	National Early Warning Scores
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NMC	Nursing and Midwifery Council
PALS	Patient Advice and Liaison Service

PARIHS	Promoting Action on Research Implementation in Health Service
PDSA	Plan, Do, Study, Act
PICC	Peripherally Inserted Central Catheter
PPH	Post-Partum Haemorrhage
QI	Quality Improvement
RCA	Root Cause Analysis
RCN	Royal College of Nursing
RCOG	Royal College of Obstetricians and Gynaecologists
ROI	Republic of Ireland
RQIA	Regulation and Quality Improvement Authority
SAI	Serious Adverse Incidents
SM	Senior Manager
TrolleyGAR	KPI's to monitor patient waiting times on trolleys
UK	United Kingdom
VTE	Venous Thromboembolism
WHO	World Health Organisation

Declaration

"I hereby declare that with effect from the date on which the dissertation is deposited in Research Student Administration of Ulster University, I permit:

1. the Librarian of the University to allow the thesis to be copied in whole or in part without reference to me on the understanding that such authority applies to the provision of single copies made for study purposes or for inclusion within the stock of another library.

2. the thesis to be made available through the Ulster Institutional Repository and/or EThOS under the terms of the Ulster eTheses Deposit Agreement which I have signed.

IT IS A CONDITION OF USE OF THIS THESIS THAT ANYONE WHO CONSULTS IT MUST RECOGNISE THAT THE COPYRIGHT RESTS WITH THE AUTHOR AND THAT NO QUOTATION FROM THE THESIS AND NO INFORMATION DERIVED FROM IT MAY BE PUBLISHED UNLESS THE SOURCE IS PROPERLY ACKNOWLEDGED".

“*Knowledge of what is does not open the door directly to what should be”*

Albert Einstein.

Chapter One: Introduction

An increasing focus on the measurement of performance and a universal drive to improve healthcare over the past three decades have resulted in the worldwide proliferation of key performance indicators (KPI's). This focus on performance and improvement justifiably extends to nursing and midwifery practice, where most patient care is delivered. It is in this context that questions have been raised about the application of KPI's and their contribution to safe and high quality person-centred care. This chapter will summarise the background to KPI implementation and explain the context of the study. The rationale for conducting the study will be presented followed by a statement of the research question, the study objectives and an overview of the thesis structure.

1.1 BACKGROUND TO THE STUDY

Florence Nightingale is frequently credited as the first nursing professional to begin recording patient care and outcomes (Montalvo 2007; Magnello 2010). Since then the nursing role has grown and developed, with nurses and midwives now being pivotal to the management of patient care. Alongside the professionalisation of nursing and rapid change within healthcare, there has, in recent years, been a proliferation of research and policy development aimed at improving healthcare quality and performance. This has led to an increase in the development and implementation of KPI's designed to measure the impact of nursing and midwifery practice. Specifically, 'nurse-sensitive' KPI's measure nursing care that is:

> "based on nurses' scope and domain of practice, and for which there is empirical evidence linking nursing inputs and interventions to the outcome" (Doran 2003, pvii).

KPI's are widely accepted to have been introduced by the American Nurses Association (ANA 1995) as a means of monitoring and measuring the impact of staffing on patient safety and quality of care. They also enable national comparisons of patient outcomes and promote quality improvement. In addition to their use as tools for national benchmarking of quality, KPI's are used by healthcare organisations to identify and evaluate areas of internal performance that require practice improvement (Montalvo 2007). The emphasis here is on KPI's capacity to improve understanding of past and

current performance and anticipate need, thus facilitating sound management decisions (Chrusch *et al*. 2016). However, healthcare organisations are highly complex, with the provision of care occurring across a wide diversity of services and areas of clinical practice. This in turn creates many variables which have the potential to impact on care, and may lead to challenges in selecting the most appropriate KPI's to be used.

Performance evaluation is further complicated in countries which operate payment systems, resulting in a heavy burden of related measurement (Martin *et al*. 2016). In addition to concerns that this results in a greater focus on finance than quality (Baker *et al*. 2010; Mannion *et al*. 2016), the large volume of measurement involved makes meaningful evaluation of performance and quality of care difficult, both within and across organisations. This is a significant limitation given the cost, time and effort that is invested, not only in the implementation of KPI's but also in the management of KPI data (Grimshaw *et al*. 2012; Mannion *et al*. 2016). It is also important to act on this data if the potential of KPI's is to be fully realised. Efforts have been made to address the associated workload of KPI implementation through the development of core measures or minimum data sets. Examples include those within the international Institute of Healthcare Improvement's "Triple Aim" project (Berwick *et al*. 2008; Martin *et al.* 2016) and the United Kingdom (UK) Department of Health's (DoH) NHS Outcomes Framework (DoH 2014a).

1.1.1 KPI's and the policy context

The development of policy has attempted to address some of the issues highlighted by the widely publicised failures in healthcare (The Bristol Royal Infirmary Inquiry 2001; Francis 2013; Keogh 2013). With a focus on improving care, early policy documents such as 'A First Class Service' (DoH 1998) in the UK, and 'Working for Health and Well-being' (DoH and Children 1998) in the Republic of Ireland (ROI), have subsequently been superseded or replaced as challenges persist. Framework documents such as 'Leading Change, Adding Value' (NHS England 2016) aim to focus attention on health and wellbeing, care and quality, and funding and efficiency. This is recognised as a means of addressing the 'triple aims' of better outcomes, better experiences for people and better use of resources (NHS England 2014; World Health Organisation (WHO)

2015). Such is the importance placed on safety and quality in healthcare, it is anticipated that the development of policy will continue.

Charged with the responsibility of implementing policies, various support agencies have been put in place. These include regulatory bodies, such as The Health Information and Quality Authority (HIQA) in ROI, and those with a focus on improving public health and wellbeing - the Public Health Authority in Northern Ireland (NI); Healthcare Improvement Scotland; and Public Health Wales. These and similar bodies all have a remit for quality improvement, and avail of KPI's as a means of measuring the quality and safety of care provision, as well as using these measurements to evaluate the effectiveness of their own roles. Nevertheless, the approaches taken by these bodies to ensure compliance and improvement have been described as dated and directive in nature (Donaldson *et al*. 2014). While admitting that this top-down approach has strengths in providing public assurance, the authors of this national governance review suggest that the disadvantage is one of local disempowerment and failure to address service user needs. Instead, they propose a change in leadership style to one which motivates and embraces innovation for improvement (Donaldson *et al*. 2014). Conceptualisations such as this have resulted in research and reports which aim to develop and strengthen leadership in practical terms from board to clinical practice (West *et al*. 2014).

1.1.2 Measuring the nursing and midwifery contribution

Against this backdrop, healthcare systems across the world are constrained by economic funding issues. In the UK and ROI, these economic constraints have resulted in: the reduction of services; difficulties in the recruitment and retention of staff; and problems with the timely transfer or discharge of patients, often due to a lack of primary care services (Health and Social Care Board 2014; Primary Care Workforce Commission 2015). Nevertheless, the imperative to provide a safe, high quality, person-centred service for people and families in their care is not only a professional requirement, but a fundamental desire of nurses and midwives (HIQA 2013). There is an obligation on nurses and midwives to demonstrate improved outcomes and experiences for patients reflective of safe, effective and compassionate care (DoH 2008). This obligation was later reinforced by Robert Francis when he advocated a clear set of quality and safety metrics

that could be universally applied to support prompt identification of declining performance (Francis 2013).

Various authors have highlighted a concern that aspects of the care which nurses and midwives provide are often hidden and not clearly definable, and are thus potentially difficult to identify and measure (Griffiths *et al.* 2008; Maben 2008; Dubois *et al.* 2013). In part, this is due to the seamless role they play within a multidisciplinary team, not only carrying out their own role, but also co-ordinating many aspects of care provided by other professionals. This is especially true regarding their role in providing emotional and psychosocial support to patients and families. Although it is possible to assess quality without using KPI's (Campbell *et al.* 2002), for example through staff and patient feedback, measurement plays an important role in providing evidence of improvement and helping to drive change through accountability and positive motivation to do better (Griffiths *et al.* 2008; Hoi 2008; Kinchen 2015). Despite this knowledge, identified challenges have resulted in few KPI's being developed to measure the patient experience (McCance *et al*. 2016).

1.1.3 KPI implementation and knowledge translation

Nursing and midwifery research produces a constant stream of new or updated evidence. However, having new evidence is of no value unless it is implemented into practice. Knowledge translation - also known as knowledge transfer, research utilisation or knowledge integration - is a process through which research knowledge is created, circulated and makes an impact on clinical practice (Curtis *et al*. 2016; Kitson and Harvey 2016). Nevertheless, proponents of knowledge translation agree that the dissemination of new evidence, such as that in KPI's, is challenging (Eccles and Mittman 2006; Rycroft-Malone 2008; Nilsen 2015). Reasons such as resistance to change have been given (Dixon-Woods *et al*. 2012). However, mandating KPI's does not necessarily compel commitment (Rycroft-Malone 2008; Schein 2010), and poor theoretical underpinning makes it difficult to understand why (Nilsen 2015). The use of theory is stated to increase knowledge of the multiple factors which may impact on the implementation process and guide success (Sandström *et al*. 2011; Nilsen 2015). Furthermore, it is argued that reliance on inspection through measurement will not achieve continuous improvement, but instead set in motion a cycle of fear that then restricts innovation (Deming 1992;

Berwick 2015). However, Berwick (2015) also states that when learning is situated within the complexity of practice, with collaboration and sharing of that learning, improvement can occur. This is consistent with a proposal made by Greenhalgh *et al*. (2004) that the implementation of evidence is an active and planned endeavour for change in organisations.

1.2 RATIONALE FOR THIS STUDY

The increasing need for good governance has generated huge attention on public accountability which Bovens (2005) suggests is a difficult concept to argue against as it evokes only positive images. The resultant growth in KPI's as a tool for evidencing compliance, and thus accountability, is contrary to the recommendations for parsimony laid out in government papers and policies (Francis 2013; DoH 2017). There is little evidence as to why this might be, although one explanation may be that it is due to organisations implementing KPI's for their own internal purposes, in addition to those that are mandated. Work has previously been commissioned by governments seeking to assess the scope of KPI's in use in their countries (NHS Quality Improvement Scotland (QIS) 2005; Griffiths *et al.* 2008). However, no evidence has been found of attempts to clarify the range of KPI's in use across the UK and ROI[1], or the various processes involved.

The patients experience is one of the most important aspects of quality that should be measured (McCance *et al.* 2012; Kinchen 2015), as it is patients and their family who receive care and thus are in a position to judge. Nevertheless, there are few solid examples of which aspects of the patient's experience are measured. 'Patient satisfaction surveys' are primarily quoted as measuring patient experience. Arguably however, these are at risk of becoming a cliché as this is frequently used as a catch-all term within empirical studies and lists of KPI's. Notably, few KPI's have been identified that measure the emotional and psychosocial care that nurses provide (Griffiths *et al*. 2008; Dubois *et al*. 2013) and yet this is a very important facet of their role.

[1] The study covers England, Scotland, Wales, Northern Ireland and the Republic of Ireland, referred to for the purposes of the thesis as regions.

Guidance papers have been produced aimed at providing advice on KPI use (Artley and Stroh 2001; Health Service Executive 2015). While these describe a process to be followed, there is little evidence in the empirical literature identifying how the use of KPI's has resulted in improvements in quality of care. Additionally, existing reviews present little evidence on how organisations report and act on their data. This is important because the principal aim of KPI use is to improve practice (DoH 2008; DoH 2017). KPI's and the data that results from their use are simply information. Despite the large number of KPI's in use, there is limited evidence of how this information is reported strategically and translated into useable knowledge. It is also unclear how nurses and midwives, working in many diverse contextual environments and at various levels in an organisation, collaborate to use KPI data that produces demonstrable improvement in care.

1.3 PURPOSE OF THE STUDY

The purpose of this study is to question how the use of KPI's influences decisions made about practice both across and within organisations. As Thompson (2001) highlighted the contribution of nurses will be judged by the decisions they make. It is anticipated that the findings will add to the knowledge-base and inform the debate on KPI use supporting the development of indicators that will facilitate the delivery of meaningful care that improves outcomes for patients and families.

1.4 RESEARCH QUESTION AND OBJECTIVES

The research seeks to answer the following overarching question:

- How does the use of KPI's influence nursing and midwifery practice?

More specifically the following three objectives were identified:

1. To scope the range of KPI's used in practice
2. To identify the processes for implementation of KPI's and mechanisms for monitoring and reporting
3. To explore the influence of KPI's on nursing and midwifery practice in an organisational context, identifying factors to maximise their impact.

1.5 THESIS STRUCTURE

This thesis is laid out across eight chapters. This first chapter introduces the research including the background and justification for the study. Chapter two provides a comprehensive review of the literature relating to KPI's, including relevant 'grey' material such as policy and white papers. In exploring the context for KPI use in more depth this chapter also identifies gaps in the knowledge-base and provides justification of this study. Chapters three and four present the philosophy and methodology upon which the research is based. Respectively they locate the study within a pragmatic paradigm and the chosen research approach deemed most appropriate for answering the research question. Chapter five subsequently reports the quantitative findings from the first phase of this mixed methods study. While quantitative data illuminate the KPI's and detail the processes involved in their use, qualitative data are needed to investigate nurses and midwives' perceptions of KPI's and their influence on practice. Chapter six therefore reports the qualitative phase two findings. Chapter seven draws together the data sets from the quantitative and qualitative phases and integrates them in a discussion of findings. Finally, chapter eight concludes this thesis identifying the limitations of the study and, importantly, the contribution that it makes to the knowledge-base on KPI use.

1.6 SUMMARY

This chapter has outlined the research objectives within the context of nursing and midwifery practice at meso and micro levels. The world-wide use of KPI's for the measurement of performance has been acknowledged with specific reference to their use in healthcare. In healthcare, the role of KPI's is important in measuring the elements of safety and quality care as evidence of performance. This is especially the case in nursing and midwifery practice. In the following literature review the use of KPI's pertinent to these different perspectives will be explored in more depth, confirming the need for this research. The subsequent thesis will set out the research approach taken, and report the resultant findings and their impact on what is currently known about KPI use.

Chapter Two: A Critique of the Literature, Placing the Study in Context

Over the past thirty years there has been steady growth in the published literature relating to healthcare performance, quality of care and the patient experience. This reflects increased interest in KPI's and their use. Through a review of the literature, the development and use of KPI's across the world generally, and in the UK and ROI in particular, will be explored. In addition, this chapter will look at the organisational implementation of KPI's relevant to nursing and midwifery care, considering: (i) their use within the context of performance; (ii) how KPI's are used to demonstrate quality; and (iii) the role of implementation science in increasing their effectiveness. Clarity about the meaning of KPI's and terminology will be discussed, and a working definition will be provided, which will act as a reference point for this study.

2.1 SEARCH STRATEGY

To achieve the objectives identified in chapter one, a narrative review was applied using a systematic approach based on the PRISMA model (Moher *et al.* 2009). This advocates the use of explicit methods to ensure transparency in reporting the quality of the research literature (Figure 2.1). The search for relevant literature was conducted across four databases: Cumulative Index to Nursing and Allied Health (CINAHL), Medline, Web of Science and EMBASE. Scopus and the Cochrane Library were rejected after a preliminary test identified only a few articles, none of which were relevant. No limits were set for publication dates. The key search words were: clinical indicators, metrics, nurs*, midwi*, performance indicators, quality improvement and decision-making (Appendix 1). The Boolean functions "AND" and "OR" were used to combine or connect the search words. All database searches were merged and a total of 298 articles were identified. Grey literature sourced from healthcare web sites revealed 20 relevant reports, with a further 25 articles identified through reference chaining. The large number of government and professional body reports highlights the need to explore the strategic context in which this study will be positioned. Following the removal of duplicates, 292 articles remained. The literature was reviewed by title, abstract, and then full-text for inclusion based on the following criteria: a) clear focus on nursing and/or midwifery practice; b) relevance to the study objectives; and c) potential contribution to

understanding how the use of indicators might influence practice. Articles not in English were rejected. A quality appraisal of the empirical literature was carried out based on a Critical Appraisal Skills Programme (2014) qualitative study checklist modified to meet the needs of a narrative review; the methodology was not confined to qualitative approaches. In total 120 papers were included in the qualitative synthesis. The narrative review then focused on presenting a thematic overview of studies and general critique of the KPI literature. To maintain the currency of the research literature for the duration of the study, email alerts were set up within the electronic databases. Appendix 2 includes a list of authors, aims, participants, methods and findings from the reviewed literature.

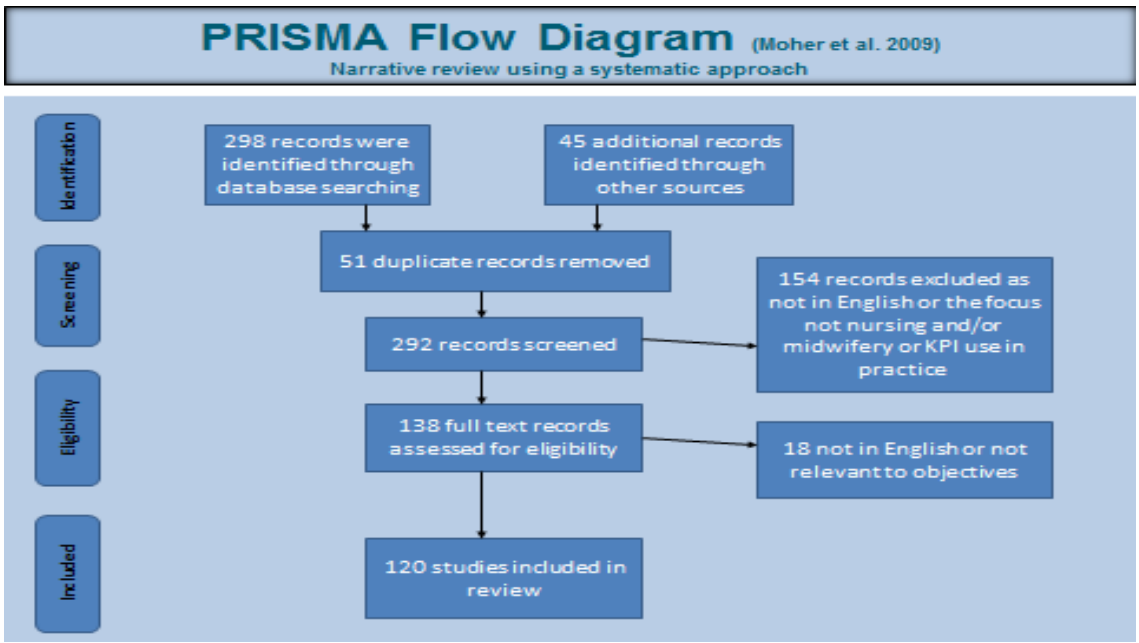


Figure 2.1 PRISMA flow diagram

2.2 KPI'S: TERMINOLOGY AND DEFINITIONS

Whilst in business and industry "key performance indicator" appears to be an accepted term, it has become evident that no universally agreed definition of KPI's exists in nursing and midwifery practice. Terminology varies across and within countries, with surrogate terms being used such as "nurse-sensitive indicators" (Heslop and Lu 2014), "nurse-sensitive quality indicators" (ANA 1995), "quality indicators" (Blozik *et al.* 2012), "clinical indicators" (Mainz 2003) and "metrics" (Ousey and White 2009). In a concept analysis of indicators, Heslop and Lu (2014) found that most authors failed to define KPI's, a conclusion that remains pertinent for this literature review. Heslop and

Lu (2014) provide no explanation for this, with other authors suggesting that there appears to be confusion about how KPI's should be defined (NHS QIS 2005; Dubois *et al.* 2013). Developing a succinct definition of 'KPI' therefore presents a significant challenge. To provide some guidance for participants, the broad definition given by Avinash (2010) was selected for inclusion in the participant information. His definition was succinct and exemplified the role of KPI's in promoting the visibility of organisational performance at a glance:

"high level snapshots of a business or organisation based on specific predefined measures"

Nevertheless, in an effort to provide greater understanding about the characteristics which define KPI's, a content analysis of 54 definitions was undertaken. This revealed twelve characteristics, which are presented in Table 2.1 below in order of prominence.

Table 2.1 Core characteristics of KPI definitions

1) Act as a measure or measurement
2) Highlight improvement
3) Reflect outcomes
4) Indicate performance
5) Allow comparison or identify trends
6) Aid understanding
7) Identify nursing contribution
8) Act as flags or alerts
9) Evidence organisational goals
10) Promote accountability
11) Aid decision-making
12) Are used across levels (in an organisation or business)

The most universal definition of 'KPI' is that of a measure or measurement (ANA 1995; Mortensen 2008). However, KPI's play an important role that far exceeds that of a mere number, as can be seen by their prominence in government reports, guidelines and policy papers. Furthermore, it is argued that a fixation on numerical measures overshadows the possibility that qualitative KPI data can also provide important information (McCance *et al.* 2012). Although acknowledged by the latter as presenting challenges, this supports Idvall *et al's* (1997) argument, based on a review of the literature, that it is necessary to find a way to make visible those aspects of nursing that are "beyond measurement" (Koch 1992, p.792). In fact Koch (1992), in one of the earlier papers that reviewed quality assurance, stated that nursing could not be represented by KPI's due to its complex and contextual nature. It is also argued that KPI's are not direct measures of care quality, but

indicate deviations from the norm or desired objective which then require further investigation (Idvall *et al.* 1997; Campbell *et al.* 2002). Similarly, a small number of authors have described KPI's as flags or alerts (Australian Institute of Health and Welfare 2008; NHS National Services Scotland 2012). While this is part of their role, especially for sentinel event KPI's (Joint Commission on Accreditation of Healthcare and Organisations 1993), it could be argued that focusing on this aspect results in a false sense of security and a belief that action is only needed if marked deviations appear.

In the business sector the term 'action' is used to describe the anticipated end result of KPI use (Mortensen 2008; Shah 2012), whereas the goal in healthcare is specifically focused on 'improvement', reflecting the link to outcomes, particularly those relating to patient care (Montalvo 2007; Parlour *et al*. 2013). It is KPI outcomes that make nurses' contributions more visible and provide explicit evidence of the difference that nurses and midwives make to quality of care (Maben *et al*. 2012; Planas-Campmany *et al*. 2015). The concept of performance arises frequently and manifests itself in many different forms, including: the use of KPI's to support performance evaluation (Australian Institute of Health and Welfare 2008; Heslop and Lu 2014); performance accountability; and performance comparison against other services and organisational goals (Griffiths *et al*. 2008; HIQA 2013). Separate from, but still closely aligned to, the use of KPI's to support performance, is the need to communicate KPI performance data across all levels in an organisation (NHS QIS 2005; Mortensen 2008). While this appears less often in the definitions reviewed, it has been highlighted as an important aspect of the role of KPI's to ensure awareness of any issues arising (Francis 2013). Finally, KPI's are described as providing the means to aid understanding (Griffiths *et al*. 2008; Royal College of Nursing (RCN) 2009), which in turn should contribute to more effective decision-making in practice (HIQA 2013; Parlour *et al*. 2013).

Clearly, many of these characteristics are interlinked although they fulfill distinct roles within various definitions. The terms and definitions selected by KPI developers often appear to be determined by the focus or intended application to practice - for example, 'clinical outcome indicators' are KPI's that focus only on outcomes of clinical care (Idvall *et al*. 1997). It may be that, regardless of the name given to them, 'performance indicator' is one of the most over-used yet little understood terms (Petersen 2012).

Essentially, the term ‘key performance indicator’ acts as a self-descriptor: it is a key tool used by a business, team or person to measure and monitor performance against an important target in order to improve practice. The focus of the KPI should be on driving and evidencing improvement, not competition; the metric should not overshadow the indicator function (Marr 2014). KPI’s are not standards, guidelines, benchmarks or audits, although they may be found in each of these.

Marr (2014) highlights that the terms ‘metric’ and ‘KPI’ are often used interchangeably but while a KPI is a metric, a metric is not a KPI. By way of explanation, a dictionary definition of a metric is given as “a standard of measurement” (Merriam-Webster Incorporated 2015); it is a quantifiable measurement such as a number, percentage or ratio. KPI’s contain metrics that act as a target to make the indicator meaningful and to act as a reference point for comparison (Marr 2014). Hatheway (2016) further states that KPI’s are strategic and metrics are tactical. By this he means that metrics differ from KPI’s in that they reflect how successful the activities taking place are (tactical) to support the accomplishment of the KPI. Metrics support KPI’s, which in turn support the overall business strategic goals and objectives (Hatheway 2016). For the purpose of this study a KPI is described as a measure that will:

(i) evidence the nursing and midwifery contribution
(ii) define what is to be measured
(iii) have an evidence-based rationale
(iv) contribute to meeting an organisational goal
(v) have a defined target
(vi) be easily understood and provide context
(vii) require information which is straightforward to collect from a legitimate source
(viii) lead to action, either to maintain consistency or to improve performance.

Additionally, KPI’s may state who is to collect the data and how frequently. Fundamental to a successful KPI is defining what is to be measured, as this is very important in setting out its purpose. Thus to be considered a KPI, a measure should be key or core to the organisation; it should be explicit and unambiguous; and it should be one of a small number that together will indicate the state of the organisation’s performance. It is for each organisation to decide which KPI’s are core to its needs (other than those that are nationally mandated) and to ensure that they are subject to periodic review.

2.3 DEVELOPMENT OF KPI'S IN HEALTHCARE

It is difficult to pinpoint the origin of KPI's, possibly because they are used so widely across the world and in many different fields of business and industry. However, references to organisational behaviour can be found as far back as 1960. At that time it was identified that the use of indicator systems could cause mistrust, create the development of a blame culture, and hinder the development of learning (Argyris 1960). Since then, the core underlying principle of KPI's - that of measurement as a means of improving performance - has appeared in various works exploring effective learning organisations (Senge 1990; Schein 2010). In addition, the seminal work of Kaplan and Norton (1992) on the development of balanced scorecards as performance measurement systems for the business sector, was a key step in the reporting and management of KPI data as we know it today. Since the 1990's, the span of KPI's has grown remarkably, with evidence of over 20,000 now in use across nearly every sphere of life (The KPI Institute 2013).

The Joint Commission on Accreditation of Healthcare and Organisations (JCAHO) (Noh and Lee 2014) and the American Nurses Association (ANA 1995) have influenced the worldwide evolution of KPI's in healthcare. These bodies were established to develop and maintain standards for care following a significant increase in healthcare expenditure in America and subsequent healthcare reforms (Costello 1995). However, Aiken *et al*. (2008), in assessing the impact of implementing the American Magnet[2] principles in an English healthcare organisation, highlight how the experience of similar economic constraints in healthcare globally, coupled with increasing costs and nursing shortages, have created challenges for the maintenance of productivity in health services. Furthermore, in a multi-national study aimed at exploring the relationship between nurse staffing, education level, and patient mortality, Aiken and her colleagues (Aiken *et al*. 2014) identified how the resulting need to provide evidence of performance to healthcare funders has led to rapid growth in KPI development and systems to support their use across the world.

[2] The term 'Magnet' originated in America when it was recognised that some hospitals had a high success rate in recruiting and retaining nurses (Aiken *et al*. 2008). Magnet status is awarded to hospitals that satisfy a set of criteria designed to measure the strength and quality of their nursing.

In the UK and ROI it is a similar story, with the introduction of various legislation and government papers highlighting the need for performance accountability. In advance of the 60th anniversary of the UK National Health Service (NHS) in 2008, Lord Darzi undertook a comprehensive review of the service, seeking many different viewpoints nationally and internationally. Aiming to provide a clearer picture of the future direction of government health policy, his report detailed certain challenges including: the need to ensure clinical inclusion in service decisions; the integration of primary and secondary care; and the provision of patient control and choice with more local accountability and less central direction (DoH 2008). Recommendations were made for developing the leadership skills of all professionals and for reforms to healthcare regulation aimed at improving the quality of care.

The King's Fund (2008), in a briefing paper in advance of Lord Darzi's review, stated that these reforms were necessary based on an identified lack of systematic data on care processes and outcomes for patients, thus making it impossible to benchmark standards of clinical practice. Furthermore, Lord Darzi's Review (DoH 2008) prompted the NHS to focus on identifying quality measures that would reflect the safety, effectiveness and compassion of nursing care. This resulted in various initiatives including the NHS Outcomes Framework (NHS Group 2014), a group set up to monitor healthcare outcomes based on a set of KPI's developed by the Department of Health in England. Similar in concept to the American NDQNI (National Database of Nursing Quality Indicators) regarding transparency and intention to inform practice, there are over 200 indicators that sit under five domains, although they are mainly process-based and not nurse-specific. Organisations were also established to support innovation for quality improvement, such as the NHS Institute for Innovation and Improvement (NHS III) in the UK and the Health Information and Quality Authority (HIQA) in ROI, both comparable in role to the Institute for Healthcare Improvement (IHI) in America.

In addition to the need for accountability, there was a call for comprehensive transparency of performance data, which was reinforced by two main factors: significant failures in patient care and increasing public expectations (Francis 2013; HIQA 2015). The sub-optimal care provided by the Mid Staffordshire NHS hospital in England (Francis 2013) and the HIQA's (2015) investigation into perinatal deaths in Ireland's Portlaoise

Hospital, are examples of healthcare reviews that have emphasised the role of KPI's in monitoring and assessing practice. These failings were partly due to a lack of systematic data on care, despite this need having been recommended by Lord Darzi (DoH 2008). With growing concerns about patient care and an increasing volume of complaints, litigation and unfavourable press coverage, there was a need to defend the safety and quality of nursing practice (Donaldson *et al*. 2014; HIQA 2015). The Francis Report supported the commitment to quality and safety measures that could be universally applied and also drew attention to the need for:

> "unambiguous lines of referral and information flows, so that the performance manager is not in ignorance of the reality" (Francis 2013, p.1690).

Moreover, some of the performance data now collected is also reported to organisations that operate in partnership with the health service, such as the National Cancer Intelligence Network. Arah *et al*. (2003), in their international review of conceptual frameworks for performance in health systems, found that the countries, which included the UK, often had overlapping quality initiatives and reporting or disclosure mechanisms. However, Ossege (2012) cautions against this rise in public organisational accountability based on his findings from a factorial survey that explored the effects of accountability on sixty-five public managers' work behaviour. He suggests that organisational accountability is aimed at improving governmental performance and can put pressure on public managers, resulting in positive and not so positive work behaviours.

As regards the indicators that have resulted from these policy recommendations, further research is required to assess how useful they are at improving care. However, in an American editorial, Smith (2007, p.43) describes the field of quality measurement and management as "teaching elephants to dance". By this she means that those organisations that did not have a prior commitment to quality measurement have now been forced into it by policy initiatives, but, despite this, the effective management of processes which drive improvement is still proving elusive.

2.4 THE USE OF KPI'S WITHIN NURSING AND MIDWIFERY

The monitoring of performance assists organisations in benchmarking against established quality targets (ANA 1995; HIQA 2013), with the National Institute for Health and Care Excellence (NICE 2014) advocating the use of KPI's to evaluate the quality of care

delivered. However, many researchers have highlighted the difficulty of measuring quality of care due to the struggle to define this concept (Mitchell 2008; Department of Health Social Services and Public Safety (DHSSPS) 2011). The Institute of Medicine (IoM) (1990, p.21) provided a focused definition specific to healthcare, with the use of the word "degree" suggesting some form of measurement:

> "the degree to which services for individuals and populations increase the likelihood of desirable outcomes and are consistent with current professional knowledge".

In light of this, high quality services should include three key components: patient safety, clinical effectiveness and patient-centredness/compassion (IoM 2001; DoH 2008), with the best exhibiting all three (HIQA 2013; DoH 2014b). The Donabedian (1988) "structure, process, outcome" model was the most frequently cited tool used to articulate the three key components of healthcare organisation and delivery, and also to evaluate healthcare quality. Researchers applied this model in various ways, including Montalvo (2007) who discussed its application as a classification system used in the American national database (NDQNI). In contrast, Dubois *et al*. (2013) drew on Donabedian's model, among others, to develop a framework to conceptualise nursing care performance. Although used mainly as a framework to guide the development of indicators for practice measurement, for example by Pazargadi *et al*. (2008) who proposed KPI's for improving healthcare in Iran, this model was also used by Burston *et al*. (2013) as a way of categorising the KPI's identified in their review. Structural indicators encompass physical resources; process indicators measure the ways in which work is accomplished; and outcome indicators evaluate the effects of interventions provided by nurses and midwives (Doran and Pringle 2011; Dubois *et al*. 2013). Furthermore, Lee *et al*. (1999), in their review, examining how nursing processes affect clinical outcomes, confirmed Donabedian's (1988) view that 'structure' influences 'process' which in turn influences 'outcome', and 'structure' cannot influence 'outcome' except through 'process'. Therefore, it is important that information is available on all three when identifying quality of care issues. Nevertheless, Doran and Pringle (2011), in a book chapter which explores patient outcomes in relation to accountability, highlight an increasing interest specifically in the measurement of outcomes, and suggest that this is because they provide evidence for accountability reviews.

2.4.1 Identifying KPI's for use in nursing and midwifery

Researchers across the world have highlighted that the influence of nursing practice on patient care has been invisible, partly, but not always, due to the difficulty in measuring care. In England, Maben (2008), in an editorial debate, suggests that this 'invisibility' results in the unmeasured aspects of care which nurses deliver assuming less importance than the measured aspects. In America, Dubois *et al*. (2013) accredit 'invisibility' to nursing's inexperience of the developing area of performance science, which results in an inability to capture the nursing contribution. Furthermore, in Korea, Noh and Lee (2014) attribute 'invisibility' to the lack of a standardised language, which makes it difficult to access nursing data. It is worth noting, however, that Doran and Pringle (2011, p.12) highlight a difficulty in finding support for a "nurse-centric approach" to the study of outcomes. Instead, they state that more emphasis is being placed on the contribution of the multi-disciplinary team, arguing that the selection of outcomes to which many providers can contribute is more efficient and realistic than trying to identify nurse-specific KPI's. They further argue that this line of thinking would help to establish trust across disciplines (Doran and Pringle 2011), although no evidence is presented for this. In contrast, this review of the literature has found over 100 KPI's identified as being nursing or midwifery-specific (Appendix 3). These were identified mainly for the acute adult sector, but there was also evidence of specific KPI's for community and midwifery practice, and in the fields of mental health, intellectual disability and children's nursing.

It was notable from the analysis of the literature that a substantial number of the papers focused on the selection and development of KPI's (Table 2.2). These nineteen papers utilised consensus group methods, which according to Humphrey-Murto *et al*. (2017) are appropriate methods to identify and measure areas where incomplete evidence exists for decision-making. Most of the consensus methods used comprised Delphi studies, although other variations included the nominal group technique (Tregunno *et al*. 2004; McCance *et al*. 2012), and the RAND modified technique (Kröger *et al*. 2007; Vasse *et al*. 2012). Table 2.2 lists the nineteen papers, demonstrating the increasing worldwide interest in the development of healthcare indicators, and compares service user involvement in their development with the inclusion of patient experience KPI's in subsequent data sets, which will be discussed later.

Table 2.2 Empirical studies with a focus on KPI selection and development

Authors	Country	Service user involvement?	Patient experience KPI's?
Shield et al. 2003	Great Britain	Yes	Yes
Zeitlin et al. 2003	European	Yes	Pat sat*
McCance et al. 2012	Northern Ireland	Yes	Yes
Dancet et al. 2013	Holland and Belgium	Yes	Yes
Hedges et al. 1999	Australia	No	No
Ingersoll et al 2000	America	No	Yes
Clarke et al. 2003	America and Canada	No	Yes
Barnsley et al. 2005	Canada	No	Yes
Kröger et al. 2007	Canada	No	Pat sat
Pazargadi et al. 2008	Iran	No	Pat sat with care
Tropea et al. 2011	Australia	No	No
Lodewijckx et al. 2012	15 countries	No	Yes
Vasse et al. 2012	European	No	No
Talungchit et al. 2013	Thailand	No	No
Van den Heede et al. 2007	10 countries	No	No
Belfroid et al. 2015	Netherlands	No	No
Tregunno et al. 2004	Canada	No	Yes
Lee and Wang 2014	Taiwan	No	Yes
Flood and Henman 2014	Ireland and UK	No	Pat sat

* 'Pat sat' denotes that the authors included 'patient satisfaction' or 'experience' but no specific measurement was given.

As some of these consensus studies concentrated on how the multi-professional team delivered various aspects of care, sets of indicators were not necessarily considered to be solely nursing or midwifery focused. Examples of the areas considered included, the selection of KPI's to measure the quality of emergency response to infectious disease outbreaks (Belfroid *et al.* 2015) and the identification of KPI's to measure the quality of infertility care in Holland and Belgium (Dancet *et al*. 2013). However, there was limited discussion regarding the number of KPI's that should be selected either generally or in the organisational context if this was applicable.

A range of structural KPI's commonly used at an organisational level were identified, similar to those listed in Griffiths *et al.*'s (2008) rapid appraisal of nursing performance measures in England. Alongside workforce measures (for example 'the number of staff vacancies' and 'staff skill-mix ratios') were measurements of staff development and skill, such as 'years of experience' and 'appraisals'. Commonly included were KPI's measuring complaints and incidents specifically related to nursing and midwifery care. However, ten papers that were reviewed cited more unusual structural indicators seeking

to measure staff experience including ‘perceptions of organisational culture and quality of care’, ‘practitioner autonomy’ and ‘practice control’ (Appendix 3).

The majority of KPI’s identified in this literature review relate to clinical care in the acute sector, and are most often based on process or outcome. Possibly due to the difficulty in distinguishing the impact nurses have on patient care from that of other members of the multi-disciplinary team, certain clinical KPI’s identified as nurse-specific appear to be focused on repeatedly (Smith 2007; Griffiths *et al.* 2008). The most frequently quoted nurse-specific KPI’s identified by this researcher include: incidence of pressure ulcers, falls, medication errors and hospital-acquired infections. These reflect those listed by Griffiths *et al.* (2008) and also by two American researchers: Montalvo (2007), who describes the role of the National Database of Nursing Quality Indicators (NDNQI); and Needleman *et al*. (2007), who reviewed American efforts to identify a set of nursing-sensitive performance measures. Other clinical KPI’s were reported less often and it would appear that their use was limited to specialist areas, such as ‘cast care’ and ‘tracheostomy or endotracheal tube care’. Examination of papers revealed that a number of the clinical KPI’s were difficult to interpret, such as ‘health/functional status’ and ‘patient characteristics’. A small number, not immediately obvious as nursing and midwifery-specific, related to ‘failure to rescue’ and the need for early warning through the completion of observations, such as ‘fluid overload’, ‘atelectasis’ and ‘iatrogenic lung collapse’. Review of the literature would suggest that the exact number of clinical KPI’s in use may be much greater if a wider definition of the term ‘care’ is used. Furthermore, if other broad descriptors are adopted - for example, ‘bowel management’ and ‘care of patients in isolation’ - it would appear that a large number of aspects of care delivery are being measured.

2.4.2 Measurement of service user experience

With an abundance of aspects of care being measured, it is not unexpected that many of the commonly cited KPI’s are perceived as negative indicators of quality. In a publication by the American Agency for Healthcare Research and Quality, Mitchell (2008, p.1) draws attention to the need for nurse-sensitive positive indicators, such as “achievement of appropriate self-care”. Researchers have also highlighted the need for KPI’s that can measure elements of patient experience and the holistic aspects of caring (Griffiths *et al.*

2008; McCance *et al*. 2012). In addition, the commitment to seek patient feedback has been clearly identified in policy (DoH 2008; Francis 2013). However, this is not without its challenges, as reported by Maben (2008) in her editorial and also by Abrahamson *et al*. (2015). In the latter's study, 232 nursing home employees were interviewed in relation to the use of data within a state programme that was being used to encourage the implementation of quality improvement projects through financial incentives. One of the challenges reported by participants was the difficulty in measuring the subtle but important changes in practice that resulted from the implementation of these projects. There was a perception that those aspects of nursing which impact on quality of life, such as compassion, listening and development of patient confidence, were not reflected in the outcomes measured (Abrahamson *et al*. 2015). Martin *et al*. (2015, p.19) describe this difficult to quantify information as "soft intelligence". In their qualitative study, involving interviews with 107 multi-professional staff, participants expressed challenges both in accessing this softer data and in turning it into a form useful for informing practice (Martin *et al*. 2015). Therefore, even though quality improvement initiatives may positively impact on these more nebulous aspects of care, the ability to capture and attribute them to nursing is lost due to a lack of relevant measurable KPI's

Nevertheless, some progress has been made in this area. Although sometimes presented as statements rather than specific measures, KPI's designed to capture aspects of the patient experience have been identified. Examples presented in consensus studies include: "time spent by nurses and midwives with the patient" (McCance *et al*. 2012); "patients are not made to feel they are wasting health professionals' time" (Shield *et al*. 2003); and "residents can decide what to wear and how to groom themselves" (Lee and Wang 2014). As demonstrated in Table 2.2, nine of the consensus studies reviewed included KPI's developed to measure patient experience without consulting with service users. In Lee and Wang's consensus study, despite the aim being to develop humanistic indicators to capture the viewpoints of nursing home residents, no service users or carers were included. Instead, service users' views of what was important to measure were assumed based on information gleaned from literature reviews (Lee and Wang 2014). McCance *et al*. (2012) and Shield *et al.* (2003) did include service users in their consensus studies. McCance *et al.*'s (2012) study had the specific aim of developing measures capable of capturing the psychosocial aspects of nursing and midwifery patient interactions, and detailed the development of a set of patient experience KPI's which

would complement a range of other KPI's. Initially developed for use in seeking adult feedback, they have also been tested internationally for use in children's services (McCance *et al*. 2016). Shield *et al*. (2003) selected KPI's from existing sources to measure a range of care in the primary care setting. However, a limitation of Shield *et al*.'s (2003) study was that, due to the rating system used, they selected fewer KPI's that measured aspects of care of value to patients and carers.

Research, seeking service user and public opinion, both quantitative and qualitative, concluded that the practice of measuring the patient's or carer's perspective through patient satisfaction surveys also needs to be reviewed (Stricker *et al*. 2009; Northcott and Harvey 2012). Patient and staff surveys provide only a broad evaluation of satisfaction unless they can be broken down and analysed in relation to the individual elements being measured. While this literature review identified frequent reference to the use of surveys, there was little indication of which aspects of care were being measured. It is therefore difficult to identify clearly defined patient experience KPI's. While highlighting this distinction, McCance *et al.* (2012) also found that, despite the inclusion of a range of participants, including nurses, midwives, commissioners and service users, more emphasis was placed on the emotional and psychosocial aspects of care than the success of treatment. This supports previous findings, including those from an experimental study which indicated that service users and the public placed more value on the opinions of relatives of nursing home residents over those of regulatory bodies (Van Nie *et al.* 2010).

Ultimately, in order to assess the quality of care, it is necessary to obtain the views of the people who experience the journey through the healthcare system (DoH 2008). In this way a complete picture can be gained of what matters, and what works and does not work, allowing valuable learning to be captured. While best achieved by asking the patients themselves, various policy advisors have stated the need to strengthen patient and organisational collaboration, and highlight that members of patient groups should be trained for active partnership with healthcare professionals (National Advisory Group on the Safety of Patients in England 2013; Donaldson *et al*. 2014). Donaldson *et al*. (2014) and Berwick (2015) make this more explicit, and state that patients and families should be involved in aspects of care ranging from policy making and quality improvement efforts to the design and evaluation of services.

The key point is that the viewpoints and issues of patients and families are incorporated into active organisational decision-making (Gagliardi *et al*. 2008). However, despite this need for involvement being recommended in many white papers, both Kötter *et al*. (2013) in a systematic review, and Walker and Dewar (2001) in an investigation of carer involvement, suggest that it is not happening. Possible reasons for this emerged from a number of papers, including two qualitative studies that specifically aimed to explore patient participation. Gagliardi *et al*.'s (2008) study explored beliefs about patient participation in performance indicator selection, and Gold *et al*. (2005) explored patient participation in the planning of supportive care networks. Researchers in these studies, which both included service users, reported that the limited involvement may be because there is no advice available for professionals on the best ways to encourage participation.

Of further interest in Gagliardi *et al*.'s (2008) study was the finding that there was variable patient interest in collaboration, and that health professionals (physicians, nurses and managers) would prefer patients to assume a consultative role. Gold *et al*. (2005), in their Canadian study, also identified the negative impact of ongoing provincial reforms on leadership commitment, and the restricted funding for network development. However, Shield *et al*. (2003), in a Delphi study, stated that professionals usually outnumber users and carers in consensus studies, as was the finding in this literature review. Therefore, it is possible that fewer of the aspects of care that patients value would be included in the final KPI selection (Shield *et al*. 2003). Only one consensus study acknowledged these challenges, stating that support was provided for service users, and planned their inclusion in the future testing of the KPI's developed (McCance *et al*. 2012).

2.4.3 Benefits of using KPI's

Wilkinson *et al.* (2000), who explored the reaction of professionals in primary care to KPI's, stated that the implementation of measures that meet the needs of both practice and the organisation not only increases patient safety and quality of care, but also enhances efficiency and the facilitation of up-to-date practice. Equally, two very different sources, Kurtzman and Jennings (2008a) in a discussion paper on the reporting of performance data in America, and Maben *et al*. (2012), in a mixed methods study exploring the relationship between patient experience and staff motivation, both highlight that, by measuring quality of care, nurses and midwives can demonstrate transparency,

accountability and a focus on improvement. Kurtzman and Jennings (2008a) also put forward an argument that nurses should be rewarded for good performance, as opposed to the organisation, if it is they who are held to account.

Heslop (2014), in an Australian editorial, points out that, as the largest occupational group accounting for a significant proportion of healthcare operating costs, nursing is particularly vulnerable to austerity measures. Whilst several authors agree with this, researchers in a European study examining the relationship between nurse staffing, education and hospital mortality, also argued that by demonstrating the impact that they make on patient care, nurses and midwives provide evidence of their worth and increase their professional value, which in turn reduces the likelihood of workforce challenges (Aiken *et al.* 2014). Similarly, in a Spanish study that analysed the contribution of nurses to the achievement of primary healthcare objectives, Planas-Campmany *et al*. (2015) found that nursing and midwifery-specific KPI's provide evidence of performance and may support arguments for resources to improve patient care. More importantly, Heslop (2014) states that nurses and midwives are able to reduce patient risk if they have access to timely data.

Based on interviews with forty executive board nurses, Jones *et al*. (2017), noted that those boards with mature quality improvement governance used all their data for improvement rather than just assurance. This is in contrast to a similar study conducted by Mannion *et al*. (2016), in which boards were found to challenge the validity and reliability of KPI data, which in turn impacted on the governance of safe care. This is notable as the authors, who were funded by the National Institute for Health Research, subsequently recommended training and education of board members in relation to understanding and interpreting data sets and KPI's. However, in the organisations described by Jones *et al*. (2017) as using their data efficiently, other positive characteristics were identified. These included the prioritisation of quality improvement; a balance of short external and long internal goals with related investment; engagement of staff and patients in quality improvement; and the encouragement of a culture of continuous improvement (Jones *et al*. 2017). In a similar vein, it has been stated that positive KPI data should be reported as a means of disseminating and celebrating successful initiatives (Phillips *et al.* 2007; Regulation and Quality Improvement Authority (RQIA) 2016). While RCN Scotland promotes the national reporting of

situations that negatively impact on meeting targets in order to encourage learning and generate action, they also indicated a need for levels of tolerance to be built into KPI's to allow for a degree of latitude in unexpected circumstances (RCN Scotland 2016), although it was not clear how this would be achieved.

2.4.4 Challenges in using KPI's

With increasing pressure on healthcare organisations to demonstrate their effectiveness and efficiency, the KPI's used can be numerous and have a very broad remit. This reflects the need to report on the extensive range of services provided, but, as Mattke *et al*. (2003) discovered when they implemented a quality reporting system in long-term care, this creates problems in condensing the information and communicating it meaningfully to achieve desired improvements in practice. Pearson (2003) suggests that while manufacturing and service industries have become very selective in identifying indicators, the healthcare sector lacks clarity about the aspects of performance on which indicators should focus. Setting a very large number of KPI's at a strategic level, while at the same time requiring them to work at the operational level where they are measured, is very challenging. For this reason researchers indicate a need to focus on a small but strategically important number of KPI's (Griffiths *et al.* 2008; HIQA 2013). Notably, the interest in KPI's specific to nursing and midwifery has increased, especially in the past five years. The researchers of three studies, one which reported an exploration of multi-national health system performance frameworks (Arah *et al*. 2003), another which examined the translation of evidence into practice (Donaldson *et al*. 2004), and more recently Burston *et al*. (2013) in a literature review, all suggest that a multitude of data is being collected, but not analysed and used to influence practice at a local level. As Snell (2015, p.15) states, reporting on behalf of the Safe Staffing Alliance in England:

> "…although nurses are chasing around collecting lots of data, and dozens of people are being employed to process it, much of it is meaningless".

The implication is that it is meaningless, mainly because it is not being acted on. This is supported by Krugman and Sanders (2016, p.346) who report the challenge of staying current with multiple data, and state how, in their experience prior to their development of a visual data display system for nurse managers, only critical data was attended to, with anything else being "filed and forgotten". The resultant risk of data burden has been

emphasised as an issue in performance measurement (Mattke *et al.* 2003; Dubois *et al.* 2013). This is implicit in some empirical papers: Wilkinson *et al*. (2000) and Tropea *et al*. (2011) highlight heavy workloads which limit the time available to assess and improve practice, while Dubois *et al.* (2013), in a systematic review, suggest that burden is due to the requirement on staff to meet an unreasonable number of targets. The risk of data burden may also be explicit: for example, the onus placed on staff to act through the use of reporting systems which increase visibility of results (Mattke *et al*. 2003; RCN 2011b; Tropea *et al*. 2011). This area requires further research.

Various barriers to the use of KPI's were identified in both empirical studies and in the 'grey' literature. The onus is on clinical staff to assess and improve the safety and quality of care, but they may claim that certain barriers prevent this occurring (Donaldson *et al*. 2014). These barriers may be resource-based or due to contextual issues. In Donaldson *et al.'s* (2014) health service review, the authors identify 'patchy' leadership as a barrier to clinicians engaging with quality improvement. In addition, recent reports, which seek to guide the transformation of healthcare, focus on the development of collective leadership behaviours. One example is a report presented by West *et al*. (2014), who were commissioned to explore collective leadership as a possible key to unlocking cultural change, following an argument put forward by the King's Fund for shared leadership across the NHS. This involves working in partnership, with everyone taking responsibility for the provision of high quality healthcare (West *et al*. 2014; DoH 2016).

Other cultural issues were also identified in two case studies. Firstly, Yearwood *et al.* (2001), who discussed the implementation of a continuous quality improvement initiative in a school of nursing, identified that student nurse inclusion in change was minimal despite being desired, reportedly because there was no history, or culture, of their participation in governance. Secondly, Gokenbach and Drenkard (2011), who explore the engagement of nurses in Magnet hospitals, included a culture of top-down decision-making as a factor which arguably contributes to lack of teamwork and poor communication. More specifically, Wilkinson *et al.* (2000) suggest that a lack of staff knowledge about the importance and relevance of KPI measures may result in a perception of reduced autonomy and trust. Further universal resource barriers to KPI implementation were identified in two studies with a specific remit to identify barriers and facilitators – one in the implementation of shared decision-making in clinical practice

(Gravel *et al*. 2006), and the other in the implementation of outcome measurement (Dunckley *et al.* 2005). These barriers include: limited skills to critically appraise the evidence; lack of time to locate and implement the evidence; insufficient clearly presented data; limited resources for data analysis; and insufficient training in quality improvement methods. In contrast, Estabrooks *et al*. (2005), who report on the theme 'sources of practice knowledge' identified from two large ethnographic case studies, argue that nurses' reluctance to use research evidence has less to do with these barriers and more to do with the nature and structure of nurses' work, which causes a heavy reliance on contextual knowledge.

Many researchers identified factors to be considered, when planning to use KPI's, that could potentially invalidate the data collected or adversely affect care, including Griffiths *et al*. (2008), Dixon-Woods *et al*. (2012) and Powell *et al*. (2012). However, while similar, they were not as extensive as those identified by Smith (1995), from which he developed a taxonomy of eight unintended consequences. Smith's (1995, p.301) taxonomy, although designed for the use of KPI's in the public sector, is still highly relevant to healthcare as it captures all of the factors identified in this literature review (Table 2.3). However, little information has been presented on how to prevent, monitor or manage these adverse events.

Table 2.3 A taxonomy of unintended consequences relevant to the use of KPI's

1	Tunnel vision –measured elements of care take priority over unmeasured
2	Adverse selection – refers to the possibility of selecting patients who will boost KPI outcomes over the more vulnerable who may not
3	Misrepresentation – the deliberate manipulation of data so that the reported behaviour differs from the actual
4	Gaming – manipulation of behaviour to meet targets
5	Myopia – focus on short term goals at the expense of longer term goals
6	Sub-optimisation – pursuit of narrow local goals at the expense of organisational goals
7	Ossification – inhibition of innovation, possibly due to a rigid organisational system of measures
8	Measure fixation

Adapted from Smith (1995)

Measure fixation, the final unintended consequence listed above, was identified as an ethical issue by Olsen (2011) in his discussion paper, and refers to the potential for KPI implementation to adversely affect care, as not all KPI's will be appropriate to patients' individual needs. Thus, strict adherence to KPI's may place nurses under pressure to make difficult decisions (Olsen 2011). Empirical studies have also raised the issue of patient harm resulting from an over-zealous desire to achieve the target set by the KPI, including the finding by Kavanagh *et al.* (2012) that the measurement of prophylactic pre-surgery antibiotics promoting unwarranted antibiotic use. Importantly, both Dwamena *et al*. (2012) in a systematic review, and Rambur *et al*. (2013) in a case study exploring the unintended consequences of performance measurement, highlight that patients may wish for outcomes other than those stipulated by healthcare professionals or politicians. As a caveat to the standardisation of care, Donaldson *et al.* (2014) in a policy paper, suggested that clinicians should be aware of what is appropriate care and use their judgement accordingly. Thus, in a concept analysis of evidence-based practice, Greenhalgh *et al.* (2014) argue that outcomes should not be subsumed by process, and that nurses working with patients can make holistic decisions even if these are not what the evidence suggests (Rambur *et al*. 2013; Greenhalgh *et al*. 2014). Furthermore, in their seminal paper on balanced scorecards Kaplan and Norton (1992) argue that although measures may be in place to support employees in achieving goals, management cannot dictate exactly how specific goals will be achieved because the conditions in which the employees operate is constantly changing. The expectation is that nurses and midwives will use their autonomy to make decisions based on need and adapt practice accordingly, further reinforcing the role of collective leadership in practice (West *et al*. 2014).

2.4.5 Performance measurement process

To support the implementation of government performance measures, a special interest group established by the America Department of Energy and associate contractors developed a six-volume compilation of techniques and tools. In volume two, which focuses on establishing an integrated performance measurement system, Artley and Stroh (2001) layout a clearly defined sequence of events, illustrated in Appendix 4. This process includes: identification of need based on strategic goals; selection and development of KPI's; implementation with relevant training and establishment of ownership; data collection, analysis and reporting; and improvement actions and performance evaluation.

The process works on a feedback loop across levels in an organisation to influence ongoing performance development.

A number of professional and government guidance papers state that the selection of KPI's is crucial and should be based on those aspects of care that are important to both the patient and nursing staff (RCN 2011b; HIQA 2013). Flood and Henman (2014) in a Delphi study, also argue that KPI selection should be dependent on a significant quality gap that needs to be addressed. In papers discussing the selection of KPI's, the grade of nurse involved was not always clear, and because healthcare organisations are now so large it is likely to be nurse managers, having an overview of the service, who decide what to measure. Thus clinical nurses and midwives may have no input into these decisions nor an awareness of the role that KPI's play in relation to either the service or their own practice, yet it is they who know best which areas are in need of improvement. Notably, the National Quality Forum (2003) in America argues that the focus should be on the areas where the evidence is greatest that measurement can have a positive impact on healthcare quality. In addition, there is also a risk that organisations measure what they can, rather than what they should (Griffiths *et al.* 2008; RCN 2011b).

The collection and reporting of KPI data has developed over recent years. However, in Australia, Burston *et al.* (2013), following a review of the literature related to nursing KPI's, call into question the nurse-sensitivity of some commonly used indicators. The inconsistency identified, arose for various reasons including differences in: KPI definitions, data sources, data collection and analysis methods, and risk adjustment models. This has implications for data reliability if the evidence derived from KPI's is to be used for organisational and national comparison. In addition, Burston *et al*. (2013) suggest that to realise the full potential of KPI's, consideration should be given not only to the reasons for data collection, but also to how it will be reported so that it is meaningful to all levels of staff and can be embedded and sustained in practice. Lang (2008), who argues the case for real-time information reporting systems in a discussion paper, highlights the huge amounts of data that healthcare organisations generate and manage. This has led to an increasing interest in electronic data systems as a means of managing and reporting multiple data (Lang 2008; RCN 2011b). In the literature that has been influential in strategic terms, there is frequent reference to the importance of such systems (DoH 2008; Berwick 2015), which enable managers to monitor performance in

real time relative to established goals and ensure transparency and accountability (Weiner *et al*. 2016). Although evidence of the benefits of these systems has been identified (Curtright *et al*. 2000), their under-use and limited adoption in all clinical areas has been called into question in government reports (DoH 2008; Donaldson *et al*. 2014). Despite patient care data being routinely collected by clinical nurses it is not necessarily represented in databases accessed for performance data (Maas and Delaney 2004; Dubois *et al.* 2013). Possible reasons for this limited adoption are included in Table 2.4.

Table 2.4: Possible reasons for the limited adoption of data management systems

• Collecting data from various sources such as patient records, incident reporting systems and administration databases, is laborious for nurse managers (Langemo *et al*. 2002; Burston *et al*. 2013)
• Computerised systems with structured templates can overshadow the more person-centred aspects of care, and result in the possibility of pertinent information being ignored because it does not fit with the documentation (Greenhalgh *et al*. 2014)
• Poorly structured on-screen formats may render the data difficult to locate and manipulate (RCN 2011a)
• Staff may not be competent in the use of computer systems, which may impact on time (NHS QIS 2005) and data manipulation (Wilkinson *et al*. 2000) and cause resistance to use

The popularity of these electronic data systems, in theory if not in practice, stems from their ability to align organisational strategies with performance measurement and management. Reporting systems such as dashboards and balanced scorecards were the most frequently cited systems that had been adopted (Curtright *et al.* 2000; Francis 2013). Analysis of the literature on these systems revealed mainly discussion papers. Weiner *et al.* (2016) discussed their experience of dashboard implementation, highlighting the usefulness of the visual representation of performance information, and the support that this system provided in helping to develop a culture of data-driven decision-making. Harte *et al*. (2012) and Montalvo (2007), respectively identified that these systems enable communication between frontline and executive managers, and assist shared learning. Dashboards also help with the identification of trends, tracking performance over time, which further supports the role of KPI's as flags to indicate potential problems and

prompt questions (NHS National Services Scotland 2012). However, while Douglas (2010) and Drake (2013) discuss how the displaying of data in pictorial form makes it meaningful and easier to interpret, Cokins (2013) cautions that they do not have the ability to convey why something matters or what might happen if a decline continues. Alternatively, balanced scorecards, which are more detailed and include financial management, are linked to an organisation's strategic plan, listing all the indicators with related benchmarks and making it possible to view the environment from different angles (Kaplan and Norton 1992; Drake 2013).

The final part of the performance measurement process entails the translation of KPI evidence into improvement in care quality. The procedures involved at the beginning of the KPI process have been the subject of research ranging from a qualitative study to explore reactions to the introduction of KPI's (Wilkinson *et al*. (2000), to consensus studies for KPI selection (Talungchit *et al.* 2013). However, a review of the literature reveals that there is limited evidence of research on the procedures towards the end of the process, such as action planning, quality improvement based on KPI data and evaluation. In light of similar findings, Davies *et al*. (2015), on behalf of the National Institute for Health Research, conducted a multimethod study of how knowledge utilisation was approached in countries outside the UK and in sectors outside healthcare. While participants acknowledged the importance of evaluation for knowledge utilisation they found it challenging, which led the authors to state that although the experiences described were rich in information an opportunity to learn was lost, as formal evaluation was rare (Davies *et al*. 2015).

While there is abundant evidence of the implementation of KPI's and the collection and reporting of data, this is insufficient *per se* for ensuring improvements in practice. Thus, some researchers believe that KPI use remains peripheral to clinical practice and requires strategies to help nurses and midwives interpret and act on the data obtained (Groff-Paris and Terhaar 2010; Burston *et al*. 2013). Groff-Paris and Terhaar (2010) did report and evaluate their performance improvement project which involved the use of both qualitative and quantitative data. The quantitative data was collected using a NDNQI survey and qualitative data obtained from the nurses involved in the implementation of the project. Despite being an older theoretical framework, Maslow's (1943) Hierarchy of Inborn Needs was used to prioritise the performance improvements identified as

necessary by the nurses involved. The evaluation identified that the culture, which took a top-down approach, did provide efficiency and control in the improvement process but did not engage staff or engender support for the projects (Groff-Paris and Terhaar 2010). A second study by Aiken *et al*. (2008) described quality improvement that was based on the use of nurse-assessed quality of care measures, although they opined that the findings would need to be confirmed in a larger study. Notably, Aiken *et al*. (2008) also referred to culture, and reported that, due to a change in leadership following an externally driven merger, commitment to the process involved was not shared by the new leaders, and the organisation concerned withdrew from the project (Aiken *et al*. 2008).

2.5 THE INFLUENCE OF KPI'S ON PRACTICE

To achieve a high-quality health system requires a combination of "a caring culture, professional commitment and strong leadership" (DoH 2014b, p.8). This has been supported by several quantitative studies which identified such factors within the nursing environment, noting their impact on nurse and/or patient KPI outcomes (Rosati *et al*. 2009; Houser *et al*. 2012; Hahtela *et al*. 2014). However, it has also been suggested that, despite their contribution to patient care, nurses lack influence in public debate over quality of care and are under-represented within the policy-making process (Hoi 2008; Sousa *et al*. 2015). This supports the findings of Kurtzman and Jennings (2008b) in a summary of results from a larger mixed methods study that aimed to gain an understanding of KPI adoption in practice. Their summary, which focuses on the findings related to leadership, highlights that the successful use of KPI's and improvement in care quality requires 'champion leaders', specifically those working at nursing executive level. This was recently confirmed by Jones *et al.* (2017) in a qualitative study of forty nurse executives, in which they stated that these nurses were ideally placed to engage board members with their safety and quality concerns.

Due to the challenges faced by nurses and managers in delivering a high-quality service in an increasingly demanding environment, a co-ordinated approach is required by clinicians and managers in order to develop a supportive workplace culture (Tregunno *et al.* 2004; Hahtela *et al*. 2014). As Francis (2013) highlighted, it is difficult to have a shared culture when not everyone works on the frontline together. Based on their findings regarding the processes used in Magnet hospitals to engage with nursing staff, Gokenbach

and Drenkard (2011) state that managers should be cautious about enforcing their views, and instead increase contact in order to gain insight into the difficulties and issues involved in delivering a high quality service. Similarly, they should also engage with multiple perspectives before embarking on a plan of performance measurement (Newhouse 2007; Rambur *et al*. 2013). This would help to address an issue identified by Mannion *et al*. (2016) in their research into board governance, whereby poor communication between clinicians and managers led to confusion over the meaning and the correct interpretation of performance indicator data.

Researchers from America (St Pierre 2006) and Australia (Sorensen and Iedema 2010) further argued that nurses at all levels need to acknowledge their different agendas, pool information and jointly monitor and resolve performance issues. Collaboration in this form would help to: (i) avoid power struggles and the creation of insular service systems which serve to undermine organisational goals (Sorensen and Iedema 2010); (ii) support the smooth flow of information across units (Kontio *et al*. 2011; Anderson *et al*. 2012); and (iii) provide multiple information sources so that managers are fully informed in relation to decision-making about care requirements (Kontio *et al*. 2011; Francis 2013).

2.5.1 KPI's and decision-making

There has been little examination of the influence of KPI's on decision-making in practice. However, a few studies have used KPI's to measure how the decisions made by nurses impact on quality of care and thus patient outcomes. In a path analysis, Paquet *et al*. (2013) used data derived from KPI's and identified how the quality of care increases when staff are included in decision-making. Similarly, Houser *et al*. (2012), in an American state-wide study, used the measurement of various KPI outcomes to conclude that shared governance increased staff and patient satisfaction, and reduced the number of adverse events. However, it has been suggested that the integration of KPI's into clinical pathways may blur the relevance of indicators to patient outcomes (Dickerson *et al*. 2001). This would indicate a lack of understanding of clinical decision-making tools and the role of KPI's in improving care (Fossum *et al*. 2011). Based on their findings from a study examining the relationship between nurse involvement in decisions and nurse-patient outcomes, Houser *et al.* (2012) propose that it may be possible to ameliorate this by involving nurses in the evaluation of outcomes and by holding them accountable

for the effectiveness of the decisions they make. Supporting Fossum *et al.*'s (2011) findings regarding a lack of understanding, Kurtzman and Jennings (2008b) put forward a different solution, stating that the collection of data is of limited value unless it is analysed, interpreted and acted on, which they suggest is not happening. In light of this, they argue for staff education and training in KPI data use and quality improvement.

In commissioned research seeking to understand nurses' perceptions regarding their involvement in decision-making, there was a belief that such involvement increased confidence and ownership, and resulted in nurses who felt that their views were heard and respected (Graham-Dickerson *et al*. 2013). The researchers concluded that being involved in decision-making increased staff satisfaction, which in turn encouraged action and impacted positively on the patient care that they provided (Graham-Dickerson *et al*. 2013). This supports previous findings (Nicklin and Barton 2007; Sorensen and Iedema 2010) and, according to Houser *et al.* (2012), also leads to increased nurse retention. In Graham-Dickerson *et al*.'s (2013) study, clinical nurses viewed involvement as a democratic process and sought more clinical input in decision-making, even at organisational level. Managers, however, viewed decision-making more as seeking opinion, and acted unilaterally. Furthermore, clinical nurses believed that they had strong autonomy in relation to patient care and were involved in the identification of problems, but felt that they had little say in the development of solutions, or their implementation and evaluation (Graham-Dickerson *et al*. 2013). This view is similar to the findings of a more recent multiple methods study, in which Turner *et al*. (2017) also state that it was often unclear who was responsible for making decisions about innovation.

Various mechanisms were presented with the potential to foster decision-making. Increasing communication and encouraging quality improvement among nursing staff were means by which general decision-making was enhanced. In relation to KPI's, the focus was on nurse involvement in the collection and analysis of data relating to their areas (Groff-Paris and Terhaar 2010; Foulkes 2011), and the use of dashboards to display KPI data (Johnson *et al*. 2006). However, Johnson *et al.* (2006) also highlight that it was better reporting systems, combined with staff-driven improvement processes, which resulted in positive nursing and patient outcomes. Three studies from America, including one involving Magnet hospitals (Gokenbach and Drenkard 2011) - acclaimed for motivating staff (Aiken *et al*. 2008) - found that the participation of nurses in a variety of

open discussion groups, such as hospital councils, nursing forums, regular multi-disciplinary meetings and committees, also facilitated collaboration in decision-making (Johnson *et al*. 2006; Graham-Dickerson *et al.* 2013). In this way, the selection and use of KPI's at organisational and clinical levels is based on informed and joint decision-making. However, in these studies, evidence was unclear regarding the extent to which such groups were common or inclusive of all levels of staff. Clinical knowledge of KPI's and how they may be used to influence decision-making are therefore areas that require further research, but appear to be linked to aspects of context, culture and the nature of evidence.

2.5.2 KPI's in the context of quality improvement

In a review that examined the use of evidence in decision-making about innovation in practice, Turner *et al*. (2017) recommend that improvement work should be guided by an explicit framework because of the diverse range of evidence available (Kitson *et al*. 1998; McCormack *et al*. 2002; Jeffs *et al.* 2013). Although, as other authors have stated, it is research evidence which is mostly applied to practice (Rycroft-Malone 2004; Estabrooks *et al*. 2005). Consequently, Turner *et al*. (2017) argue that decision-makers have to be explicit about which type of evidence influenced the decisions made regarding innovation. Furthermore, Greenhalgh *et al.* (2004), in a review examining the dissemination of service innovation, suggest that implementation methods should be theory-driven, thus exploring the link between the intervention and the expected outcome to determine which factors contribute to success or failure. This view is shared by many researchers including Eccles *et al*. (2005), Estabrooks *et al*. (2005) and Rycroft-Malone *et al*. (2013). However, in the literature reviewed, evidence of a theoretical underpinning to quality improvement work was limited. This finding is supported by Arah *et al*. (2003) who identified a similar gap in the knowledge-base regarding how performance data are used to improve care quality. In their review, which aimed to understand the concepts of some international performance frameworks for healthcare, Arah *et al*. (2003) also raise doubts about the ability of performance measurement frameworks to address effectiveness and quality at both service level and health system level.

In the literature which explores the development and selection of KPI's, the Donabedian (1988) model was the most frequently cited global framework, and the reasons for this

have been previously discussed (Pazargadi *et al*. 2008; Burston *et al*. 2013; Persenius *et al*. 2015). Alternatively, in Canada, Dubois *et al*. (2013) report the development of a conceptual framework of nursing care performance adapted from Donabedian's work but incorporating Parsons' (1960) social action theory which defines the criteria on which human services (or society's) performance must be assessed. This framework conceptualises performance within the functions: "(1) acquiring, deploying and maintaining nursing resources; (2) transforming nursing resources into nursing services; and (3) producing positive changes in patients' conditions" (Dubois *et al*. 2013, p.6). The authors claim that this widens the view of nursing performance beyond acute care and illustrates the diversity of nursing. In Switzerland, Kleinknecht-Dolf *et al*. (2014) designed an instrument based on Perrow's (1967) theoretical framework which includes three domains: (1) knowledge of the patient; (2) nursing interventions – decision-making and planning; and (3) carrying out interventions (Perrow 1967). This framework is also similar to that of Donabedian, but offers a subjective approach to patient care, as well as capturing an overall picture of the complexity of each patient's needs and resulting nursing care. However, this is an older framework which Benibo (1997) suggests is task orientated and was originally designed to compare organisations.

The limited application of theory within the KPI literature prompted a search for a greater understanding of the approaches to quality improvement. This was obtained by studying implementation science, which is an emerging discipline in the area of quality improvement and arguably an overarching theory, defined by Eccles and Mittman (2006, p.1) as the:

> "scientific study of methods to promote the systematic uptake of research findings and other evidence-based practices into routine practice, and, hence, to improve the quality and effectiveness of health services and care".

Bauer *et al*. (2015) describe implementation science as a field of science which shares the same goal as quality improvement - to improve the quality of healthcare. Researchers of implementation science draw on theory from a wide range of disciplines, and also contribute to the development of theory (Eccles and Mittman 2006; Nilsen 2015). However, several researchers have expressed difficulty in choosing an appropriate theory due to their quantity and diversity (Mitchell *et al*. 2010; Rycroft and Bucknall 2010, Schaffer et al. 2012; Tabak *et al*. 2012). Indeed, this led to Tabak *et al*. (2012), among others, conducting a review of theoretical models in an attempt to help researchers better

identify and select models to inform their improvement work. Tabak *et al*. (2012) divided the 61 models they identified into five categories on a continuum from models related mainly to dissemination, to those related mainly to implementation. Nilsen (2015) also provides a taxonomy of implementation theories, models and frameworks, although it is less detailed. In comparing the theoretical models identified by these researchers with those identified in the KPI literature, only one model appeared in all three: the Promoting Action on Research Implementation in Health Service (PARIHS) framework (Kitson *et al*. 1998). In the KPI literature, this framework was used by Botti *et al*. (2014) to guide the implementation of a management algorithm for post-operative pain, with KPI's being used to evaluate the outcome.

While it was not possible to review all of the theories in depth, Nilsen's (2015) taxonomy provided a useful overview of some of those available. Those pertinent to the use of KPI's include process models, implementation theories and determinant frameworks. Process models act as practical guides and include the well-established and extensively used IOWA model (Iowa Model Collaborative 2017). Originally based on Roger's (2003) Diffusion of Innovations theory and designed as a pragmatic guide for the evidence-based practice process, this model has been recently revised and discusses the use of KPI's for monitoring. However, while its developers highlight the need to promote adoption of the practice change, little guidance is provided as to how this might be achieved (Iowa Model Collaborative 2017).

Nilsen (2015) classifies Normalisation Process Theory (May and Finch 2009) as an example of implementation theory, and the PARIHS framework (Kitson *et al*. 1998) as an example of a determinant framework. Tabak *et al*. (2012) place these latter two models at the high end of their continuum, and are therefore strongly focused on implementation as opposed to dissemination of evidence-based interventions. Normalisation Process Theory (May and Finch 2009) is designed to provide better understanding of how changes in practice are embedded and to address specific aspects of implementation (Nilsen 2015). This theory takes cognisance of the factors involved in the implementation, embedding and integration of practice and explains the operationalisation of complex interventions in health care settings, proposing that collective action and context be considered (May and Finch 2009). However, in relation to KPI's, it does not take into account the role of evidence in implementation.

Models classified by Nilsen (2015) as 'determinant frameworks', include variables that have been found to influence implementation and which require consideration for successful outcomes. The PARIHS framework (Kitson *et al*. 1998), for example, considers the interlinked variables of: (1) evidence – in the form of research, clinical expertise and patient choice; (2) context – considering culture, leadership and evaluation; and (3) facilitation (Figure 2.2). Comparing these variables with the analysis of the literature, the PARIHS framework (Kitson *et al*. 1998) potentially offers a useful theoretical framework to underpin the successful implementation of KPI's into practice. Refinement, validation, and clarity of the key elements of the PARIHS framework have been ongoing since its first publication (McCormack *et al*. 2002, Rycroft-Malone *et al*. 2004; Harvey and Kitson 2016). Internationally, researchers have also explored the use of the framework as a practical and theoretical model to guide their work (for example, Brown and McCormack 2011, Rycroft-Malone *et al*. 2013, Botti *et al*. 2014). An examination of the theoretical and practical challenges to its implementation in relation to KPI's would encourage nurses and midwives to use all forms of evidence, consider the impact of context (with its sub-elements of culture, leadership and evaluation), and explore if facilitation would better enhance their understanding of how to translate KPI evidence into practice.

The use of theory which Greenhalgh *et al*. (2004) and Nilsen (2015) state is beneficial in providing a clear explanation of the link between the intervention and the expected outcome could be useful, as literature suggests a tension exists in the notion of merging formal research knowledge with the informal or tacit contextual knowledge of practitioners. Researchers, Greenhalgh *et al*. (2005) and Titchen (2000), argue that the successful merging of both forms of knowledge evidence is very much dependent on an individual's interpretation of a particular context and negotiation with them on how best to blend the two. This struggle to merge research evidence with unique contextual considerations reflects the need for a theoretical position that prioritises some form of facilitation. Harvey and Kitson (2016, p.6) contend that it is facilitation which activates "implementation through assessing and responding to characteristics of the innovation and the recipients (both as individuals and in teams) within their contextual setting". This is supported by Ham *et al*. (2016) in a King's Fund paper developed to aid action on quality improvement. These authors further highlight that facilitation would also benefit the requirement for a sustained commitment of time and resources. Equipped with this

knowledge, the factors likely to impact on the implementation of evidence may be addressed (Greenhalgh *et al*. 2004). However, this necessitates clarity in relation to what evidence encompasses in a healthcare setting.

Given their central role in care delivery, it mainly falls on nurses and midwives to implement KPI evidence into practice (Hoi 2008; Stalpers *et al*. 2017). However, in order to increase the likelihood of care being delivered based on evidence of what works, there must not only be a theoretical grounding, but also knowledge of appropriate implementation strategies and the numerous quality improvement tools that exist, such as: Lean; IHI Triple Aim; Root Cause Analysis; Plan Do Study Act (PDSA); Productive Leader; and Six Sigma (RQIA 2016; Implementation Science 2017). It is argued that nurses and midwives lack this knowledge and understanding, and thus there is limited uptake for quality improvement (RQIA 2016). Despite policy recommendations that clinicians should receive education and training in quality improvement methodology (DoH 2008; National Advisory Group on the Safety of Patients in England 2013), this has not happened (Ham *et al*. 2016). Instead, Ham *et al*. (2016) state that the toxic effects of accountability prevail and are hindering the development of a learning culture.

Recognition of these problems has promoted the work of organisations such as NHS Improvement and IHI, which support research into knowledge utilisation and implementation science and offer a lens through which to explore these problems. Additionally, with no single implementation model meeting the needs of all practice settings, researchers argue that greater understanding of theory, together with evidence-based practice models and frameworks, would help to break down the complexity of translating evidence into practice and aid successful change (Rycroft-Malone and Bucknall 2010; Schaffer *et al*. 2012).

Challenges of knowledge translation

Globally, there are significant challenges and complexity in ensuring that evidence is translated into practice for improved patient care (for example, Kirkley *et al.* 2011; Parmelli *et al*. 2011; Curtis *et al*. 2016). Numerous researchers identify a gap in the translation of this evidence into practice (Grimshaw *et al.* 2012; Rycroft Malone *et al.* 2013). Knowledge translation is the term used to describe:

> "the process by which knowledge moves from where it was first created and refined to where it has to get to in order to make an impact on clinical practice and patient care" (Kitson and Harvey 2016, p.294).

The challenges associated with knowledge transfer are equally applicable to KPI's, as they are not only based on research evidence but also provide evidence through their measurement function (McCormack *et al*. 2002). As previously outlined, few indicators currently exist to measure staff and service user experience despite policy calling for their inclusion (DoH 2008; Francis 2013). In clinical settings prominence has been given to keeping clinical practice abreast of robust research evidence, meaning that other forms of evidence such as professional consensus and patient need have been given less attention. Consequently, there is limited evidence of what is important to these groups, and there is potentially a missed opportunity to gain a comprehensive picture of practice.

This leads to the question why the nature of evidence on which KPI's are based appears to be skewed towards policy and research. The nature of evidence has been defined as a combination of research, clinical expertise and patient choice (Sackett *et al*. 1996; Kitson *et al*. 1998). The Promoting Action on Research Implementation in Health Service (PARIHS) framework acknowledges this and offers one knowledge translation model to support the notion that evidence in all its forms is important for the implementation of evidence into practice (Kitson *et al.* 1998). Indeed, Kitson *et al.* (1998) argue that a continuum for successful implementation occurs when robust evidence matches professional consensus and patient opinion (high evidence). Thus research evidence may range from unsystematic (low evidence) to rigorous (high evidence), and clinical expertise may be judged to range from high to low level depending on knowledge, skills and professional consensus. The richness of data obtained from patients' opinions in relation to their experiences will naturally vary from high evidence, which includes a process of systematic feedback and input into decision-making, to superficial feedback (low evidence) (Kitson *et al.* 1998; McCance *et al*. 2012).

The PARIHS framework (Kitson *et al.* 1998) also articulates the need to consider the practice context in which the sub-elements of culture, leadership, and evaluation are again based on a continuum. Originators of the PARIHS framework argue that the context is receptive to change when sympathetic cultures, effective leadership and appropriate

evaluation systems (high context) are present. This has relevance to KPI implementation and measurement, as KPI's meet the high-level criteria for evaluation through their measurement function. While implementation science is one way to guide and assess how well KPI's have been implemented in practice, this is an area that is under-researched.

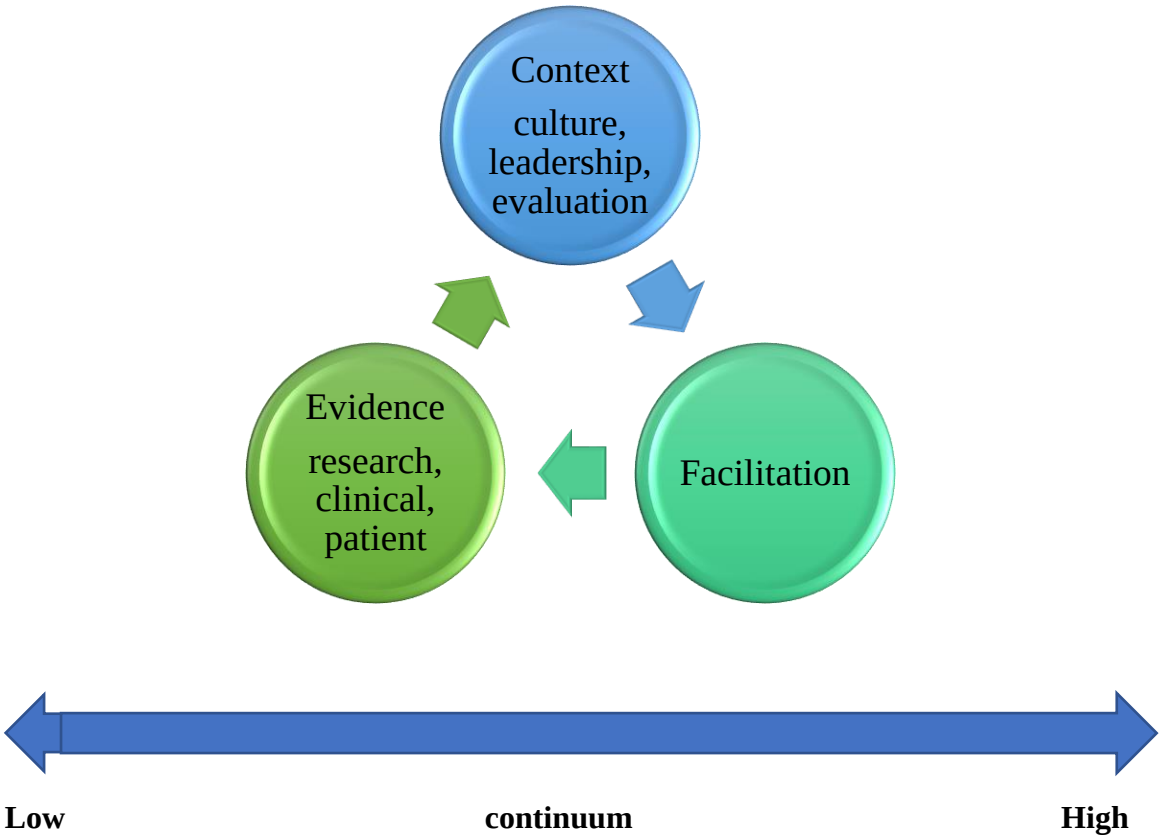


Figure 2.2 The PARIHS framework (Kitson *et al.* 1998)

2.6 SUMMARY

In this chapter a review of the literature regarding the world-wide use of KPI's led to the exploration of KPI definition and terminology. The development of KPI's has been discussed and their importance in validating nursing and midwifery practice has been highlighted. Progress has been made in developing KPI's that capture the more person-centred aspects of nursing care, although further work is necessary to provide measurement that permits unambiguous understanding of the patient experience. The benefits of, and challenges to effective KPI use have been identified, as have factors which influence decision-making based on their use. The study has also provided an overview of implementation science and its application for aiding knowledge utilisation and fostering quality improvement.

This chapter has located the use of KPI's within the many different contexts of the healthcare system. It is recognised that despite extensive support for KPI's there is little evidence of clinical nurses' and midwives' knowledge of, or involvement in, decisions about KPI use. Yet the literature is clear that, as experts in their fields, they should be involved throughout the process. There is limited knowledge of how KPI data is communicated within organisations and the effect this has on decisions made at each level of nursing and midwifery. Indeed, there is very little discussion of the strategic management of KPI data or the relationship between nursing at the organisational and clinical levels in respect of performance accountability (Sorensen and Iedema 2010). Consequently, there is a need to explore this further to identify and understand the factors which support effective use of KPI's within an organisation. A mixed methods approach is therefore considered the most effective means of meeting the objectives of this study by identifying current KPI use, exploring the relationship between these KPI's and the decisions nurses and midwives make, and examining how this relationship influences their actions in practice.

Chapter Three: Philosophical Worldview

Engaging in knowledge creation requires consideration of the source, nature and development of knowledge. This chapter will therefore discuss the most commonly considered philosophical paradigms, with a focus on pragmatism, and provide justification for use of this belief system within the study.

Two major research philosophies have been identified in the Western tradition of science, namely positivist whose proponents argue that reality can be observed and described objectively, and constructivist where the contention is that reality is open to subjective interpretation (Galliers 1991; Johnson and Onwuegbuzie 2004; Polit and Beck 2014). However, a third option has been advocated; that of pragmatism. Pragmatists recognise that there are many ways of interpreting the world and undertaking research, and argue for the mixing of more than one research approach in a study if this will support action (Creswell 2014; Johnson *et al.* 2017). Pragmatism offers an opportunity for the use of both the objective quantitative, and subjective qualitative approaches in a mixed methods study, and has been selected as a means to fully explore and answer the research questions and objectives of this study.

3.1 KNOWLEDGE AND REALITY

As a quest for a deep understanding of something, philosophy asks questions about the nature of understanding and thus of enquiry and knowledge. The answers we create in response to our philosophical questions represent our views and include what we take to be our knowledge. In essence, traditional philosophy asks two questions of whatever is of interest: ‘what is the nature, or reality, of the subject in question?’ and ‘how can we know this, if at all?’ (Burrell and Morgan 2005). This assumes that there may be a single reality and truth. However, an alternative viewpoint has been put forward by pragmatic researchers which centres on the belief that reality is not a fixed entity, cannot be known and thus challenges these traditional metaphysical assumptions (Morgan 2014). By learning more and changing what we think in light of this learning we get closer to the ‘truth’, but this truth if it exists, is always subjective and involves an element of guesswork (Popper 2002a; Magee 2010).

Karl Popper, a philosopher of the 20th century, developed a theory of knowledge centred around his belief that scientific knowledge must always be conjecture, for it will always be replaced by new knowledge which is closer to the truth. This is not dissimilar to the view of Socrates - that we can never know the truth, everything is open to question, even the answers to those same questions. Popper (2002b) realised that, like the natural sciences, the social sciences too are in a state of perpetual change, and the pace of that change is increasingly fast. Thus certainty, or truth, is equally as elusive in society and therefore enforcing a single viewpoint is never warranted. Our reality, what we know and how we know it, constantly changes. As a result, Peters (2014) argues that we continually strive to progress and learn through problem-solving, replacing one theory with a better one as we gain new knowledge.

3.2 RESEARCH PARADIGMS

Philosopher Thomas Kuhn (1962) advanced the idea that research enquiry is characterised by paradigms or world-views. He described a paradigm as a general concept that refers to a group of researchers who have a shared education and belief system. Any knowledge acquired is filtered through whatever paradigm, or belief system, is in play, which in turn influences how we construct and understand the world. Furthermore, Bryman (2012) has highlighted that the adoption of a particular research paradigm is crucial since it influences decisions about the important focus of the study, the way the study is conducted and the way results are interpreted.

In research, ontological, epistemological, methodological and axiological assumptions have traditionally collectively defined a research paradigm, which guides the researcher's beliefs and underpins the research that is taking place (Denzin and Lincoln 2013; Creswell 2014).

- Ontology refers to the nature of reality, and in social science research the two commonly held views of social reality are that of the objectivist and the subjectivist (Lincoln *et al*. 2011). Creswell (2014) states that the objectivist (or realist/post-positivist) ontology assumes a single, concrete reality that would exist regardless of people's activities, whereas the subjectivist (or idealist/constructivist) ontology assumes multiple realities due to each individual's differing perceptions. As will be discussed later, it is this aspect of philosophy that causes the most debate among

researchers as they try to rationalise pragmatism as a third paradigm, and which in turn impacts on epistemology.

- Epistemology refers to the nature of knowing in an attempt to understand the concept of reality (Dewey 1917). It is concerned with understanding the meaning of knowledge; what does it mean to know something, and how do we know that we know? When considering the epistemology of a study, Guba (1990) suggests that a researcher would ask: what is the relationship of the knower to the known (or knowable)? Is it quantitative-realist or qualitative-idealist?
- The methodology is the strategy which outlines the way in which the research will be undertaken. It offers the theoretical underpinning required to understand and aid selection of the method or set of methods required to answer a particular research need. Whilst distinct from the methodology, Lacey (2015) contends that the methods of enquiry broadly fall into the paradigms of quantitative or qualitative methods.
- A fourth philosophical concept which is sometimes discussed is axiology which refers to how people determine the value of different things. Morgan (2007) argues that values and beliefs are better considered in relation to the philosophy of ethics and aesthetics than to the philosophy of knowledge. Conversely, the argument is made here that values and beliefs impact on research priorities and the choices that are made, as well as influencing the purpose of the study, and should be clarified (Sandelowski 2000).

Consequently, the views that a researcher holds in relation to these four positions defines their perspective of the world, and in this study that is one of pragmatism.

The post-positivist paradigm

Positivist and post-positivist assumptions are held to represent the traditional form of research and are primarily associated with quantitative approaches, such as tests and questionnaires (Guba and Lincoln, 1982; Crotty, 1998; Mertens 2010). Post-positivism refers to the scientific thinking that followed after positivism whereby, rather than the belief that there is an absolute truth, it was recognised that truth cannot be positively confirmed (Philips and Burbules 2000). Sometimes called the scientific method or positivist research, knowledge that develops through this lens is objective and based on observation and measurement (Creswell 2014), therefore “anything that cannot be verified by experience is meaningless” (Blaikie 2004, p.98). However, constructivist

researchers such as Guba and Lincoln (1982) and Gage (1989) object to the use of scientific methods to study human behaviour based on the premise that human nature is inconsistent and often contradictory. They attack the objectivity in post-positivist research believing that there is no 'linear causal method' to understand human behaviour since it is neither stable nor uniform (Guba and Lincoln 1982; Gage, 1989).

The post-positivist tradition originated from the work of August Comte, the founder of positivism in the 19th century. Advancement of positivism, based on critique by researchers including Karl Popper and Thomas Kuhn , led to post-positivism. These researchers subscribed to the perspective that the world exists separate from our understanding (Crotty 1998). Consequently, meaning is found in objects rather than the researcher's consciousness of those objects (Shah and Al-Bargi 2013). According to Morgan (2014) this then constrains the experiences of post-positivists to that which is measurable in the natural world resulting in the impartial discovery of absolute truth. Often described as a deterministic philosophy (Creswell 2014), post-positivist researchers assert that there are laws or theories that govern the world and thus they aim to identify the cause of outcomes and the effect on the social world in order to understand it better. However, critique that post-positivism fails to understand the diversity and complexity of individuals and society led to the emergence of the constructivist paradigm.

The constructivist paradigm

Constructivism, or interpretivism, is a subjective perspective often characterised by qualitative approaches (Bryman 2012; Creswell 2014). Emerging from the work of researchers such as Lincoln and Guba (1985) and Crotty (1998), constructivism aimed to address the void which post-positivism did not fulfil; to seek an understanding of human reality in the social world. For Richards (2003, p.38) this is achieved through the eyes of the "social actor"; people with their own stories "acting in particular circumstances at particular times". Constructivist believe that individuals develop subjective meanings from their experiences, which are many and varied, resulting in complex viewpoints (Creswell 2014). For them, meaning is constructed by individuals through their interaction and interpretation within a particular setting or experience (Crotty 1998; Bryman 2012) and are influenced by cultural norms. Researchers within this paradigm rely on the participant's view of the situation being studied to gain a greater understanding. Creswell (2014) states that rather than starting with a theory, which may

be supported or refuted, researchers inductively develop patterns or theories from their data through which they make sense of the meanings others have about the world. However, Morgan (2014) highlights that this limits our understanding of the world, ruling out the potential for learning from the scientific methods, while many researchers state that because the meanings are context bound generalisation is impossible to achieve (Guba and Lincoln 1982; Leung 2015).

The history and background to pragmatism are discussed in detail below but Table 3.1 illustrates the pragmatic paradigm and its philosophical assumptions in comparison to two other paradigms widely discussed in the literature - post-positivism and constructivism.

Table 3.1 Research paradigm assumptions

Paradigm	Post-positivism	Pragmatism	Constructivism
Ontology	Single fixed reality but known imperfectly; truth can never be found.	No commitment to any one philosophy. Reality is complex. Truth and meaning are tentative and changing. High regard for the reality and influence of human experience. Single/ multiple realities accommodated	Multiple realities are constructed as we engage with the world
Epistemology	Objective point of view. Relies on scientific evidence to develop relevant, true statements. Validity and reliability are important	Objective and subjective, truth is what works at the time. The focus should not be on questions about reality and laws of nature. Dependent on the needs of the research question	Subjective point of view. Influenced by social and cultural norms
Methodology	Time and context free. Information collected is measurable. Acknowledges researcher influence on the observed	Multiple methods and perspectives based on what works to solve individual and social problems	The generation of truth is always social arising through interaction with others. Differing ideas, perspectives and arguments are examined
Axiology	Bias is inevitable but works to correct it by using unbiased approaches	Supports eclectic beliefs	Brings personal values into the study
Methods	Quantitative approaches	Mixed: the needs of the research question dictate priority to either quantitative or qualitative methods. A purpose for mixing methods must be established	Qualitative approaches

Adapted from: (Tashakkori and Teddlie 1998; Onwuegbuzie *et al*. 2003; Creswell 2014).

3.3 PRAGMATISM AS A PHILOSOPHICAL PARADIGM

To gain an understanding of pragmatism and the philosophy on which it is grounded, it is necessary to consider the viewpoints of the recognised founders. Pragmatism came to prominence in the 19th century through American philosophers such as Charles Sanders Peirce, William James and John Dewey (Pansiri 2005; Talisse and Aikin 2011). These early pragmatic philosophers never considered pragmatism as a distinctive paradigm and were even divided over how it should be defined (Talisse and Aikin 2011). However, they were all in agreement on the need for a new view of science and knowledge. For James and Dewey this was based on the belief that nothing is ever certain, which went very much against the view of the scientific community up until that time (Magee 2010). Pierce on the other hand, the acknowledged founding father of pragmatism and a scientist, dismissed ontology and the questions this raised in relation to the nature of reality. As a scientist, his desire lay in achieving unbiased answers to questions (Johnson *et al*. 2017). Therefore, he focused on the development of pragmatism as a theory of meaning, a "method of ascertaining the meanings of hard words and abstract concepts" (Pierce 1935 cited in Talisse and Aiken 2011, p.1). Pierce believed that as the research progressed the methods required would emerge (Johnson *et al*. 2017).

James, on the other hand, drew meaning from the subjective experience believing that reality was continually shifting (Johnson *et al.* 2017). He proposed that, rather than ignoring the ontological concerns, we use pragmatism to uncover the practical consequences of a situation to identify the nature of its reality at that point in time (James 2000). In this way James was interested in exploring people's beliefs and the actions that resulted from those beliefs. He proposed that people are unlikely to adapt if their beliefs do not correspond with their experience (Johnson *et al*. 2017).

Like James, Dewey was curious about how people react to their experiences and similar to his fellow pragmatists, he considered 'knowing' to be an active concept rather than passively gained through observation (Magee 2010; Field 2017). He argued that science should aim to gain understanding of experiences in order to make practical judgements about how to deal with problems, and favoured 'learning by doing' which combined taking account of theory with being practical (Powell 2001). In this way Dewey emphasised the human experience rather than abstract philosophy. For him ontology and

epistemology were not as important as understanding the human experience (Dewey 2008a). Despite their various individual viewpoints, the pragmatists viewed knowledge as an instrument which we, as active participants, use to gain explanations for things that puzzle us (Pierce 1935 cited in Talisse and Aiken 2011).

Interest in pragmatism dwindled following the Second World War, when the scientific and logical techniques of analytical philosophy prevailed. Then, in the 1980's Richard Rorty sparked renewed interest in the development of pragmatism as a methodological approach. The ensuing critique against quantitative research led to a period known as the 'paradigm wars' (Gage 1989; Hammersley 1992). This resulted in the development of two separate research cultures, the quantitative approach versus the qualitative, with a focus on their differences and arguments about which was superior, rather than identification of their unique strengths and how they could complement each other (Johnson and Onwuegbuzie 2004). However, the great debate that this 'war' encouraged has resulted in many contemporary researchers (Abbas Tashakkori, Charles Teddlie, John Creswell, Anthony Onwuegbuzie, Burke Johnson and Donna Mertens among others) now appreciating the advantages of both cultures and championing pragmatism as an alternative third paradigm (Johnson and Onwuegbuzie 2004; Morgan 2014).

Purists from both quantitative and qualitative research (Lincoln and Guba 1985; Popper 2002a; Maxwell and Delaney 2004; Denzin 2010) argue that, as it is not possible for a researcher to hold more than one world-view, equally it is impossible to mix paradigms in a study. Until recently, contemporary pragmatic researchers did little to refute this, focusing more on how the practical mixed methodology harmonised with their arguments rather than demonstrating a philosophical link for mixing methods (Denzin 2010; Morgan 2014; Riazi 2016). However, Morgan (2014) argues that to be taken seriously as an alternative paradigm, ignoring the underlying philosophy is not an option. In part the debate over whether it is possible to mix methodologies is intensified because it is usually taken that epistemological paradigms are tightly bound to specific ways of doing research (Rolfe 2006; Morgan 2014). While Morgan (2014) would agree with this affinity, he also points out that there is no predetermined claim that a particular paradigm should be linked with a particular set of methods, and this includes any preconceived idea that pragmatism is uniquely linked to mixed methods research. Furthermore, if the terms quantitative and qualitative are thought of merely as data collection methods, as in Creswell *et al.'s* (2003)

definition whereby quantitative researchers collect numerical data and qualitative researchers collect textual data, then, Rolfe (2006) argues, mixed methodology research is feasible. Indeed, Maxwell (2015) cites examples of studies combining the use of quantitative and qualitative methods that can be found in astronomy both with the ancient Greeks and later in the 17th century with Galileo, well before the concept of paradigms became popular. Therefore, Bazeley (2003) and Tashakkori and Teddlie (2010) defend that mixed methods research has a longer history and is not as newly emerging as has been argued.

The practical, problem-solving approach that pragmatism affords is however considered to be an insufficient argument on which to base our understanding of it as a philosophical system (Denzin 2012; Morgan 2014). Consequently, with the rise in popularity of mixed methods research, many researchers have been defending pragmatism as a philosophical paradigm in its own right (Johnson and Onwuegbuzie 2004; Pansiri 2005; Morgan 2014). Arguments that it is not possible to mix paradigms in a study have been refuted, with Johnson and Onwuegbuzie (2004) highlighting that it is not possible to be totally objective or subjective in any research. Johnson and Onwuegbuzie (2004) also highlight that while post-positivists may claim to be objective they disregard the fact that many subjective choices need to be made, such as what to study, which approach to take and methods to use, and which conclusions to draw. Constructivists likewise claim to be subjective but work within an analysis framework when interpreting data, provide a rationale for sample selection and need to be objective when reaching conclusions, especially if an opinion has been obtained that goes against logic or law (Johnson and Onwuegbuzie 2004).

Consideration needs to be given to the question of whether ontology should be considered within pragmatism if, as Dewey (2008a) suggests, it is the nature of human experience rather than the nature of reality that is relevant. As an emerging paradigm it was difficult to identify discussion on this point. However, Morgan (2014) puts forward an argument based on Dewey's work, which is worth noting. Morgan argues that while Dewey disregards arguments about the nature of reality he does not deny the differences between post-positivism and constructivism. Instead, for Dewey, ontology encompasses both the single reality of the post-positivists, and the multiple realities of the constructivists but he was not concerned with understanding these realities. For him, regardless of which

viewpoint a person takes, the claims they make about their experience are equally important and valid (Morgan 2014). Both contribute to knowledge development, albeit viewed through different lenses (Morgan 2014, p.4):

> "On the one hand, our experiences in the world are necessarily constrained by the nature of that world; on the other hand, our understanding of the world is inherently limited to our interpretations of our experience."

It does not matter whether we believe either in a reality that exists apart from our understanding, or multiple realities created by our conceptions, because we are all constrained by our experiences in the world and our interpretations of these, which limits our understanding (Dewey 2008b).

3.4 THE PRAGMATIC RESEARCHER

Dewey's belief that it is more useful to understand the nature of human experience than the nature of reality resulted in a more dynamic form of enquiry than the abstract metaphysical form (Morgan 2014). Dewey believed that knowledge is based on our experiences: our beliefs inform our actions which in turn inform our beliefs, and so on, in a cycle of learning through reflection and action (Morgan 2014; Johnson *et al*. 2017) (Figure 3.1). Often we do not question our actions in response to certain experiences: they are habits (Morgan 2014). Enquiry, on the other hand, is self-conscious decision-making based on cognition, emotions and social influences, and was supported in this study through research training, field notes, supervision and discussion with colleagues. In pragmatic research, enquiry provides information which influences our choices and the way we carry out our research (Dewey 2008a).

The pragmatic paradigm acknowledges that the researcher will bring into a study their own view of reality, assumptions and values, which will play a role in interpreting the results (Johnson and Onwuegbuzie, 2004; Mertens and Hesse-Biber 2013). Regardless of personal subjectivity, the results of the study must still be substantiated by evidence and are subject to the judgement of others (Denzin 2010; Morgan 2014). The pragmatic researcher needs to be challenged about assumptions that may be made: critical debate is therefore required to increase insight and self-awareness, and to ensure that informed decisions are made and reflected in the data. This will, in turn, support inter-subjectivity - the mutual understanding that is required between the researcher and those who read

and review the research, which is central to the pragmatic approach (Morgan 2007). How this was achieved is described in detail in chapter four.

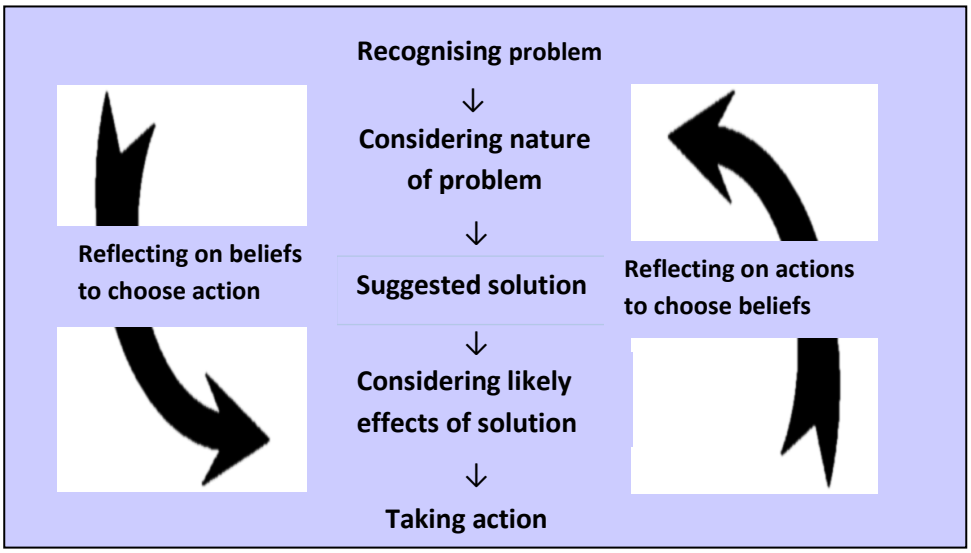


Figure 3.1 Dewey's model of inquiry (Morgan 2009)

Pragmatism provides an underpinning foundation for this study as it supports the use of various methods as a means of answering the research question and identifying the truth of the situation at a particular point in time (Johnson and Onwuegbuzie 2004; Creswell 2014). This is based on Dewey's transactional realism where he argues that truth is constantly changing, is dependent on the context and results from the solving of problems (Dewey 1929; Hickman 2009; Hall 2013). Therefore, as a researcher within a pragmatic paradigm, the focus is on the practical research experience and on how the researcher's beliefs influence the actions they take, such as the choice of methods and what effect one choice might have over another (Powell 2001; Morgan 2014). Creswell (2014) states that the pragmatic researcher places the research question at the centre of the study and then uses whatever methods are available to understand and answer the question.

3.5 PRAGMATISM AS A CONCEPT FOR CHANGE

Attention also needs to be given to the impact of Dewey's pragmatism beyond the philosophy and methodology of this research. Powell (2001) suggests that pragmatism plays an equally significant role in the transfer of knowledge. Morgan (2007) agrees with this and, when considered broadly within practice communities such as those in nursing and midwifery, he clarifies that social views, or paradigms, exist that exert a powerful

influence over what is deemed to be meaningful knowledge and which actions are appropriate. For Dewey, these paradigms develop based on knowledge arising from the struggles of previous experiences. Furthermore, Johnson *et al*. (2017) argue that this knowledge becomes evidence which is relevant and gains value when selected for use in future events. To effect change, "old experience is used to suggest aims and methods for developing a new and improved experience" (Dewey 2008a, p.134). In this way, evidence moves from awareness that something is amiss, through the formulation of a problem and forecasting of possible outcomes, to a review of what this may mean and, finally, action (Figure 3.1). To this end Dewey (2008c) identifies reflection as the active ingredient through which communities are able to define the issues that matter the most and then to address these in the most meaningful way.

Pragmatism and the work of the American pragmatists are noted as the inspiration for Deming's Plan, Do, Study, Act (PDSA) Cycle for Learning and Improvement (Moen 2009) and also for other tools in the scientific method such as Six Sigma and Lean. Following several iterations from its inception, including the addition of a model for improvement (Moen *et al*. 1991), the PDSA Cycle evolved to become a widely recognised tool for improvement (Figure 3.2). Of note is the question added by Langley *et al*. (1994): 'how will we know if a change is an improvement?' This is frequently answered using metrics (Berwick 2015), and the PDSA Cycle itself can be used either at an organisational level or for smaller cycles of improvement or change in practice.

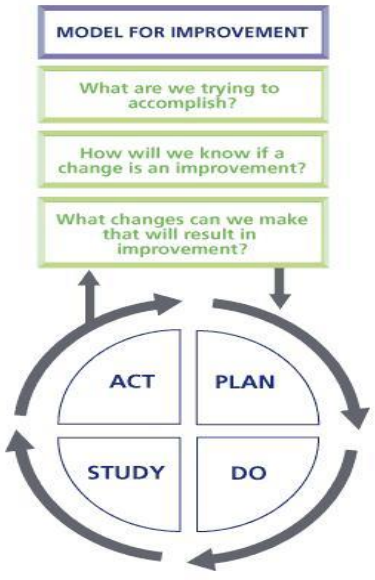


Figure 3.2 PDSA Model for Improvement (Langley *et al*. 1994)

Dewey's philosophical influence, which encourages 'learning by doing' and combines the theoretical with the practical (Magee 2010), was alluded to in the theories of knowledge transfer in the previous chapter and has been clearly outlined here. It will continue to weave through this thesis.

3.6 RESEARCHER POSITIONING IN RELATION TO THIS STUDY

There is ongoing debate among mixed methods researchers about whether it is important to understand and acknowledge how personal philosophical assumptions can influence study decisions (Bawden 2006; Gorard 2010; Mertens *et al.* 2016). Nonetheless, personal values and beliefs will, consciously or not, impact on all decisions made while undertaking a research study. It is therefore important to clarify for the reader, "thoughts about the nature of research" (Morgan 2007, p.52) and the world-view which will underpin this study and guide the research process.

My first introduction to KPI's was about eight years ago during a presentation in the hospital in which I worked. Up to that point I had no working knowledge of KPI's nor I think, did my colleagues. This was not terminology with which we were familiar. Following that presentation, which was reporting back on KPI research being carried out in the Trust, I began to think about my work in relation to indicators. I became more aware of KPI's that were reported in the press or in policy papers, although they were not always labelled as such. It became a game to guess which KPI might have led to the information being reported. Due to my curiosity about KPI's I was very interested to hear that they were to be the focus of a PhD study. I was also in a position in my life where I was ready for another challenge, and when the opportunity arose to apply for this study I went for it.

Not having worked in clinical practice for ten years prior to beginning this doctoral study, I would classify myself as an 'outsider'; a researcher with little or no engagement with practice (Reed 2010). However, Corbin Dwyer and Buckle (2009, p.60) suggest that rarely is a researcher either totally an 'insider' or an 'outsider', but will inhabit "the space between". As an 'outsider', this position has certain advantages and disadvantages. In their guide for doctoral students, Drake and Heath (2011) discuss the advantage of having no history with participants, thus minimising power plays and the need to balance

loyalties and values. In addition, maintaining the rigour of a study is less of a challenge than for an 'insider' (Drake and Heath 2011). Similarly, Kent (2015) contends that it is easier to maintain distance and rigour when there is little prior knowledge of the topic and no knowledge of the setting. In this respect I was at an advantage, as I had never used KPI's in my clinical career and held no particular beliefs in relation to their use in practice. On the other hand my lack of experience with KPI's meant that I needed to ask more clarifying questions during the interviews. However, this also had the benefit of encouraging conversation and provided an opportunity to unpick the finer details of the discussion.

Corbin Dwyer and Buckle (2009) also suggest that my desire to study the particular topic of KPI's, which I had been interested in for some time, placed me closer on the continuum to that of an 'insider'. I therefore had to remain alert to the possibility of any preconceptions interfering with my interpretation of the findings. For this reason care was taken during the analysis to ground the data through accurate presentation, and there was strict adherence to the principles of rigour. I was also conscious of the requirement to maintain my own reflexivity as an aid to avoiding bias. As part of my pre-interview checklist I mentally prepared to remain neutral, actively listen and focus on my role as a researcher.

My own particular methodological preference is that of qualitative research, mainly based on my use of this method during my MSc study. I also believe that my background in facilitation and practice development, with their focus on reflexive practice, have encouraged my preference for narrative rather than numbers. However, I fully acknowledge that quantitative research has value, and that the methodology and methods used should be those that are best suited to answering the research aims and objectives (Morgan 2007). Over the past decade I have been working in healthcare in educational roles supporting clinical practitioners in their personal and professional development. This has provided opportunities to test my learning style (Honey and Mumford 1992). While my style has fluctuated between that of a reflective learner and a theoretical learner, possibly due to my own academic development at that time, tests have always concluded that I maintain a balance as a pragmatic learner. This is consistent with my personal characteristics of being practical and a problem-solver. I have always had a straightforward, matter-of-fact approach to life and feel a strong affinity to pragmatism.

For these reasons I would strongly identify myself as a natural pragmatist, and by extension a pragmatic researcher.

3.7 SUMMARY

The philosophical rationale that accommodates mixing of qualitative and quantitative approaches of research into a single study is pragmatism. It is argued that we can never know if there is a single reality or multiple realities, therefore there is no logical reason to take a stand on either view. Following this line of thinking, ontology is removed from the philosophical decision-making process. Therefore, the constraints that making this choice imposes - to follow an objective or subjective epistemological and methodological path - are removed. The researcher is then free to focus on which approach and tools, or combination thereof, best contribute to understanding the human experience of the given situation and as a result answer the research question. Although concerns have been addressed regarding the philosophical incongruity between the post-positivist and constructivist positions in mixed methods research, there remains the need for a systematic, rigorous and transparent approach to ensure research quality. This will be addressed in the ensuing methodology (Teddlie and Tashakkori 2009).

Within paradigms, researchers hold very different beliefs based on their experiences, which then influence their actions in the research world (Morgan 2014). The exploratory pragmatic approach taken in this study is the researcher’s attempt to learn and problem-solve, as discussed throughout this chapter. The practical aspects of pragmatism, while not claimed to be perfect, are argued to be the most effective for this task.

Chapter Four: Methodology

This chapter discusses the overall mixed methods research design which is congruent with a pragmatic paradigm. The steps taken to answer the research question and objectives are detailed in this chapter and an overview of the phases of the research are presented. Challenges in the mixing of quantitative and qualitative research approaches are identified. Justification for the researcher's choices within the study design are presented, including the data collection and analysis methods, participant recruitment and ethical considerations. Finally, rigour is considered in relation to the methodologies used.

4.1 RESEARCH QUESTION AND OBJECTIVES

As previously identified in the literature review there are many complexities associated with the effective and efficient use of KPI's, where the aim is not only to measure outcomes but to drive improvement and evaluate the impact made by nurses and midwives. Subsequently, one research question with three objectives guided the study:

Research question: How does the use of KPI's influence nursing and midwifery practice?

Research objectives:

1. To scope the range of KPI's used in practice
2. To identify the processes for implementation of KPI's and mechanisms for monitoring and reporting
3. To explore the influence of KPI's on nursing and midwifery practice in an organisational context, identifying factors for maximising the impact of KPI's.

4.2 MIXED METHOD DESIGN

Scientific endeavour requires researchers to select the most appropriate methodology and methods for a specific investigation (Teddlie and Tashakkori 2009). Having explored the underpinning philosophy, and accepting that to fully address this research question required the blending of both qualitative and quantitative approaches, it became apparent

that a mixed methodology supported by the pragmatic paradigm was most suited to exploring and illuminating the phenomenon of KPI use.

While historically, quantitative methodology has been the mainstay of health services research, in recent years there has been increasing interest in qualitative methods as a means of unearthing the complexities of healthcare (O'Cathain *et al.* 2007a; Topping 2015). Used together, in a mixed methodology, many benefits have been acknowledged including; more comprehensive understanding of organisational structures and processes and the impact of care delivery; increased confidence in the research findings; and provision of a voice for social justice and disempowered groups (Mertens 2003; O'Cathain 2013; Creswell 2014). Acknowledged researchers broadly define mixed methods thus:

> "Research in which the investigator collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches or methods in a single study or program of inquiry" (Tashakkori and Cresswell 2007, p.4).

Choosing an appropriate research design entailed identifying the approach that was most suited to addressing the research aims and objectives (Morgan 2014). A mixed methodology was selected for this research because it permitted the use of different methods, which together provided a greater depth of understanding of the KPI phenomenon (Turnbull and Lathlean 2015). It is this that addresses Bryman's (2007, p.8) concerns that the end product should be "more than the sum of the individual quantitative and qualitative parts". It also provided a means of building on the strengths and reducing the weaknesses inherent in each approach (Creswell 2014). In addition, an opportunity is provided to discover anything that would have been missed if only a quantitative or a qualitative approach had been used.

In this study both methods were required to address distinct research objectives and thus the overarching research question (O'Cathain *et al.* 2007b). The quantitative approach of the first research phase employs many of the elements of post-positivism: objective collection of data through a measurable questionnaire; elimination of bias in sampling; a deductive process identifying statistical variables from the data; and presentation in a formal empirical style. The qualitative phase reflects the constructivist elements: an active process where reality is socially constructed using data gained through interaction

with others; the researcher, as facilitator, to uncover deeper meaning; biased interpretations; and an inductive approach creating understanding from textual data. The objective data from the questionnaire and the subjective data from the interviews balance each other and enhance the findings of the research (Mertens 2003; Teddlie and Tashakkori 2009). In this way both methods are complementary. Pragmatism, then, provides the lens through which the post-positivist and constructivist elements are drawn together, integrating both sets of data to gain more in-depth knowledge and a comprehensive understanding of the role that KPI's play in influencing nursing and midwifery practice.

The advantage of a mixed methods methodology can only be achieved through the integration of both methods and it is this integration which mixed methods researchers argue adds value and increases confidence in a study (Bryman 2007; O'Cathain *et al*. 2010; McKim 2015). It is important to note that it is possible to include more than one method in a study and not be using a mixed methods approach (Moran-Ellis *et al*. 2006). In 'combined methods', different approaches may be used to answer different research questions, or a qualitative approach may follow a quantitative approach or vice versa. O'Cathain *et al*. (2007b) state the latter as justification for undertaking a mixed method study, for example one method guides the sampling of another (Sandelowski 2000). However; if we follow Moran-Ellis *et al*.'s (2006) argument, this would be viewed as a combined method. The distinction between mixed methods and combined methods occurs in the relationship between the two approaches. For example, in a combined method, a qualitative approach may be used to enlarge on the quantitative findings but it is argued that while this may improve the depth of findings, there is unequal contribution to knowledge of the phenomenon because of the lack of integration (Green *et al*. 1989; Moran-Ellis *et al.* 2006). Therefore, the integration of methods has significant impact on the quality of a mixed methods study.

There are many different design options for a mixed methods study and to this end numerous typologies, or classifications, have been created providing a choice of frameworks to meet the needs of the research (Tashakkori and Teddlie 1998; Sandelowski 2000; Creswell and Plano Clark 2011). Additionally, there was the option to take a "dynamic approach" (Creswell and Plano Clark 2011, p.59) and create a bespoke research process designed around the methods needed to answer the research question

(Maxwell and Loomis 2003; Hall and Howard 2008). This was considered as an option for this study as it did not neatly fall into one of the six major classifications - convergent, sequential exploratory, sequential explanatory, embedded, transformative or multiphase designs (Creswell and Plano Clark 2011; Halcomb and Hickman 2015). Reasons for this related to the 'priority' given to the research methods and are discussed below. The selected framework needed to guide the implementation of the research methods and increase confidence in the trustworthiness, rigour and high quality of the research design (Creswell and Plano Clark 2011; Denzin and Lincoln 2011).

To guide the choice of framework design, key decisions were made in relation to timing, priority and integration (Teddlie and Tashakkori 2009; Creswell and Plano Clark 2011; Turnbull and Lathlean 2015). To assist with the decision-making and framework selection process, the work of Creswell and Plano Clark (2011) was reviewed. This decision was based on their robust work in compiling a comprehensive typology of design classifications based on the work of 15 authors.

Timing

In a mixed methods design timing, meaning the order or sequence of the phases, which may be simultaneous or staggered, needs consideration (Sandelowski 2000; Morse and Niehaus 2009; Teddlie and Tashakkori 2009). In this study the quantitative and qualitative phases occurred in chronological order (Creswell 2014; Morgan 2014), with the qualitative data "building upon the initial quantitative results" (Creswell and Plano Clark 2007, p.71), thus a sequential exploratory design was chosen. Within Creswell and Plano Clark's (2011) own classification there are two frameworks available for a sequential design:

Figure 4.1 The explanatory sequential design

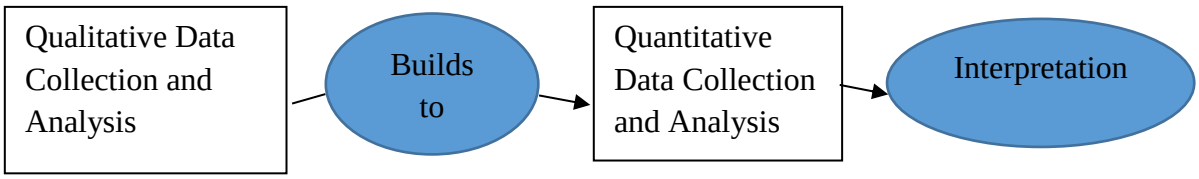


Figure 4.2 The exploratory sequential design

Priority

Although the explanatory sequential design framework appeared to be an obvious choice, there was a drawback with this classification when it came to considering priority, also known as weighing or dominance (Turnbull and Lathlean 2015). Priority considers if one method is dominant over another or if they are equal (Creswell 2014), although this may not be known until late in the study (Turnbull and Lathlean 2015). The literature revealed a difference of opinion in relation to priority. Whereas, Morse (2010) argues that the methods used cannot assume equal authority, others disagree (O'Cathain 2010; Creswell and Plano Clark's 2011). Despite this, in Creswell and Plano Clark's (2011) classification, the first phase is always given priority. This study was primarily exploratory, as it aimed to understand rather than explain how the use of KPI's influenced practice and to identify factors that impacted on their effectiveness. Thus, neither framework was a natural fit on this occasion as the dominant phase was the qualitative second phase, due to the sample for this phase including additional important sectors of the target population, which Bamberger (2015) states are often excluded. It could be argued that this research was a variant of either of these frameworks and as Creswell and Plano Clark (2011) suggested, could be used as a guide. However, following further review of the typology (Creswell and Plano Clark 2011), the work of Morgan (2014) presented a more suitable option.

Morgan (2014) in his sequential priorities model builds on the work of Morse (2003) and suggests four design frameworks, which are each assigned a different role depending on the motivation for combining methods. These frameworks can be presented as visual designs where the use of capital letters denotes priority and arrows denote direction of sequencing (Morse 2003). Using Morgan's (2014) model this study design would be that of:

a preliminary quantitative input to a core qualitative method.

Visually represented by the notation:

quant → QUAL.

Preliminary quantitative methods can be used to identify data sources for a subsequent stage as well as revealing insights through inductive examination of the data even though this data is quantitative (Morgan 2014). When applied here, the quantitative phase takes place first in order to meet objective one through the provision of both deductive and inductive baseline knowledge of KPI use, across a large number of organisations. This then contributed to the generation of questions for phase two with the intention of meeting objectives two and three.

Integration

Finally, consideration is given to the integration of data in mixed methods research. A mixed methodology involves the collection, analysis and interpretation of data in numerical forms for quantitative methods and narrative forms of data for qualitative methods (Parahoo 2014). However, it was important that the data sets were mixed or integrated and inferences drawn from both research methods (Teddlie and Tashakkori 2009; Creswell and Plano Clarke 2011; Turnbull and Lathlean 2015). The imperative for integration of data from both methods at any, or multiple points throughout the study was grounded in the rationale that without this integration, the knowledge gained would be no greater than if either method had been used independently (Bryman 2007; O'Cathain *et al*. 2007b). It is suggested that integration may occur once or on several occasions during a research inquiry in four possible ways; connecting, building, merging and embedding (Creswell and Plano Clarke 2011; Fetters *et al*. 2013). Table 4.1 clarifies where, and how, integration occurred throughout this study.

Table 4.1 Integration methods and their applicability to this study

Approach	Description	Application in relation to this study
Connecting	Occurs when one approach links with another through a sampling frame	Phase one questionnaire respondents self-selected for participation in phase two
Building	Occurs when the results from one approach informs the data collection of another	Significant findings from phase one were used to help develop the interview guides for phase two
Merging	Occurs when the data are brought together for analysis and comparison	The data were integrated in the final interpretation of findings when both data sets were merged in search of convergence, divergence and discrepancy
Embedding	Occurs when data collection and analysis are linked at multiple points. Usually in transformative / multi-phase designs	Not applicable for this study

Consequently, based on consideration of the issues discussed, Figure 4.3 presents a visual representation of the mixed methods design developed for this study, which will guide implementation of the methods. It illustrates the sequencing of the methods applied and highlights that data integration occurred once the data from both phases had been analysed.

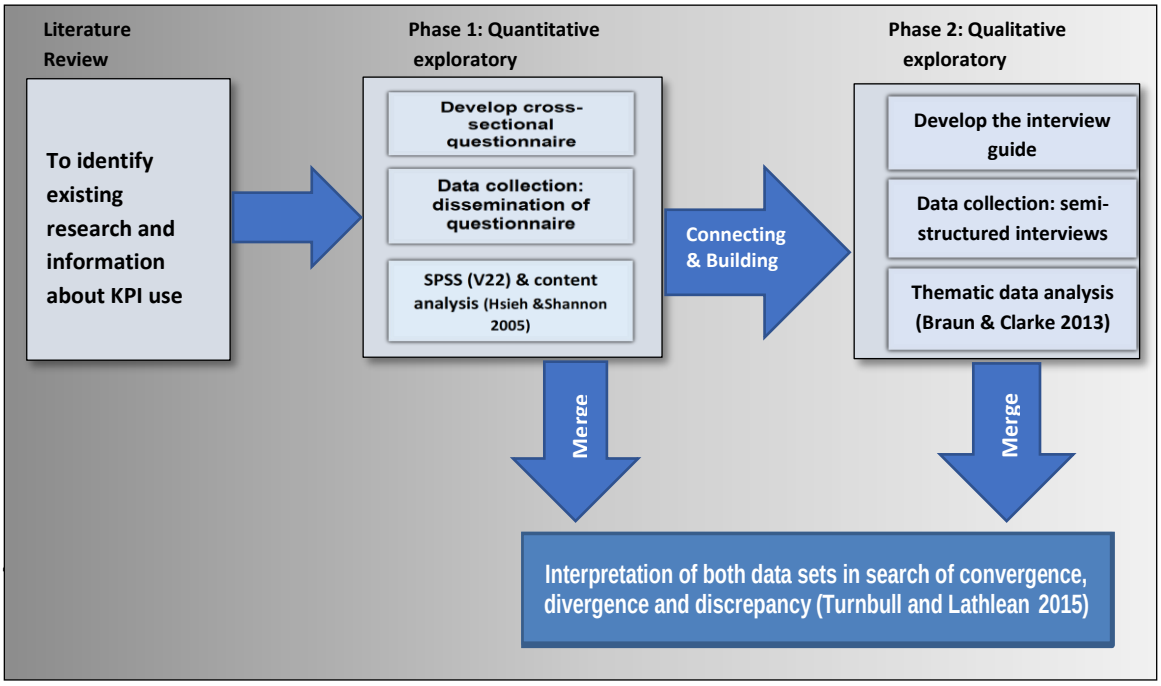


Figure 4.3 Overview of the research

Apart from identifying the benefits of adopting a mixed methods approach, it is also important to acknowledge that there are disadvantages. Included among these are; the increased time needed to conduct two phases of research, the requirement for the researcher to have skills in both quantitative and qualitative methods, and the potential for additional cost and resource requirements (Teddlie and Tashakkori 2011; Bamberger 2015; McKim 2015). To increase the value of this study (Bryman 2007) these potential issues were addressed through; the development of a responsive and supportive supervisory team; researcher training in qualitative and quantitative methods and project management; and successful applications for additional external funding.

4.3 PHASE ONE

A quantitative approach was employed for the first phase. This phase addressed objective one and contributed to objectives two and three, with data collection taking the form of a descriptive, cross-sectional survey (Hasson *et al*. 2015) (Appendix 5). The questionnaire established which KPI's were being used across the five regions and what processes were in place to support their use.

4.3.1 Data collection method

The questionnaire was designed by the researcher to meet the specific aims of this study as no validated or appropriate tool could be identified (Appendix 5). The questionnaire design was based on the process identified in the Performance Measurement Process Model (Artley and Stroh 2000, Appendix 4) which corresponded to processes identified in studies exploring KPI use. Further review of the literature led to the identification of the main themes and subsequent related questions. A first draft of the questionnaire is presented in Appendix 6. To ensure the proposed questions matched current practice, professional colleagues and the supervisory team members with expertise in KPI use were consulted. This resulted in development of a pilot questionnaire. Testing, followed by essential amendments, gave rise to the final questionnaire (Appendix 5). The online software development tool Qualtrics was used to create the questionnaire and manage the collection of data (Qualtrics Development Company 2015). The questionnaire comprised 29 items in total and ended with an invitation to participate in phase two (Appendix 5). The questionnaire structure is set out in Table 4.2.

Table 4.2 Questionnaire structure

I	The first section of the questionnaire focused on general information about the organisational profile such as country, size of population covered, services provided and the number of nurses and midwives employed.
II	The next section was divided into four parts and took a quantitative approach. It focused on which KPI's were in use at organisational level, within clinical practice and specific areas of practice and those relating to the patient experience. To reduce participant burden the researcher included the most frequently reported KPI's as multiple-choice options. Open text boxes were provided for participants to include any additional KPI's used in their organisations.
III	The final section sought information on operational processes. It consisted mainly of open text boxes in recognition of the fact that individual contextual factors would result in unique KPI processes and procedures within each organisation. Two final subjective questions were designed to gain an overview of how KPI's were used to influence practice.

Pilot Study

Pilot testing was carried out with nine comparable healthcare organisations in Australia, and eight responses were obtained. The pilot enabled the testing of access through healthcare security firewalls, as well as the usability of the software programme and management of the data. Additionally, feedback was sought from the pilot participants regarding; the length of time to complete, questions that were not clearly understood, and how user friendly the online questionnaire was? The time required to complete the questionnaire was measured at approximately 25 minutes, within the 30 minutes suggested as a time after which fatigue may set in (Timmins 2015). Minor modifications were made to the questionnaire and the online software tool based on pilot participant feedback. This included adding a progress bar to the online questionnaire to encourage completion and ensuring the system saved participant information to allow them to exit and return without losing data. The question on population size was set to allow only numerical data to be entered as it was noted that text such as "state-wide" was being added which was unquantifiable.

Process for dissemination

Each country in the UK and ROI has a nursing and midwifery professional lead known as a chief nursing officer (CNO). The CNO's had been made aware of the research at the outset of this study, through communication with the CNO for Northern Ireland, and each had offered their support to encourage participation. Dissemination of the questionnaire was initiated through an email sent by the researcher to each CNO. This email included a request that it be forwarded to the executive directors of nursing (DoN) for each healthcare organisation in their respective jurisdictions via their email distribution lists. The email (Appendix 7) took the form of a letter of invitation (Appendix 8), and a participant information sheet (Appendix 9) to which a Microsoft Word copy of the questionnaire was attached. This was included to accommodate participant choice and could be posted or emailed back to the researcher. A hyperlink was also embedded in the body of the email which provided access to the online questionnaire. This mode of data collection permitted ease of use, was inexpensive to implement, and reduced the effort of manual data entry (Guise *et al.* 2010).

Although the majority of the questions only required a tick response, there were a number of open questions that required some thought and text entry. It was anticipated that the use of this 'eQuestionnaire' would also encourage a greater response rate as it was possible to apply logics. These logics ensured that certain questions remained hidden unless the system identified them as applicable to the participant, thus potentially reducing completion time. To further encourage response, a strategy suggested by Dillman (2002) was employed following modification for email delivery. Dillman's strategy involved the dissemination of a thank-you email one week after the original had been sent with a reminder to non-respondents, then two weeks after that another email was sent to all participants with the original attachments included. The final step in this strategy involves the resending of the email to non-respondents only, but as the questionnaire was anonymous this was not possible. In both England and ROI, data protection regulations prevented the researcher having access to the email lists used for dissemination. Contacts were established in each of these countries that the researcher could liaise with and who confirmed that dissemination of the questionnaire and follow-up reminders had taken place.

Participants were initially provided with one month for completion of the questionnaire. However, due to unanticipated delays in dissemination from the CNO offices in ROI and England the closure date was extended by three weeks. One week before closure an email was sent to the CNO's requesting their support in a final email to all participants. Participants were informed that a number of partially completed responses were noted in Qualtrics and they were encouraged to complete and close these for submission within the following week. This proved effective with a further eight fully completed questionnaires being returned.

4.3.2 Sampling

The target population for this phase of the study were the DoNs of healthcare organisations in the UK and ROI. These executive nurses were deemed to be the richest source of information in relation to the organisational and clinical use of KPI's specific to nursing and midwifery, and thus to answer the research question (Hunt and Lathlean 2015; Patton 2015). As such, this group represented a probability sample for this quantitative phase, which ensured equal opportunity of selection and permitted generalisation (Hunt and Lathlean 2015). This clearly defined population also reduced sampling error and potential researcher bias in participant selection. In each country the participant organisations work within different systems. Some organisations incorporate both primary and secondary care, while other organisations may focus their care provision on only one of these services. As policy was focused on integrating hospital and community care to streamline the service, it was considered important to include both these areas in the research (NHS 2014). In this way the findings would benefit the future development and use of KPI's, in what will be an integrated system. Discussion with the deputy CNO of ROI highlighted healthcare restructuring in the country at the time of data collection. The aim of the restructuring was to amalgamate the large number of hospitals and community organisations into smaller groups which would have a resultant impact on the DoN positions. As this process was ongoing for the foreseeable future the recommendation was to include the original 310 Irish organisations. The organisations included are presented in Table 4.3 below:

Table 4.3 Phase one sample

Country	Organisation	Number
England	Foundation and non-Foundation Trusts	165
Republic of Ireland	Public and voluntary health care including primary care	310
Northern Ireland	Health and Social Care Trusts	5
Scotland	Health Boards	14
Wales	Health Boards and Trust	8

This resulted in a total of 502 healthcare organisations being eligible for inclusion. The exclusion criteria for the UK included; ambulance trusts, public health, general practitioner practices and private/voluntary healthcare organisations. For ROI, the terminology of the exclusion criteria was amended to include; ambulance trusts, general practitioner practices and the private sector. This was due to a slight difference in terminology whereby public health included community nursing, and some public hospitals were classed as 'voluntary public' due to the governance and funding arrangements in place. It was anticipated that the DoNs, as the most senior nurses, would be the best people to complete the questionnaire based on their knowledge of KPI use in their respective healthcare organisations.

4.3.3 Data analysis

Questionnaires were checked for completion. This highlighted the questionnaires that held sufficient data to be included in the study. Consequently, questionnaires that included only organisational profile information were excluded based on the criterion that this phase aimed to gather information on current KPI use as well as contribute to answering the research question. All other questionnaires, regardless of whether they had only completed section two but not section three, were included. In this way, the value of the data, and participant time and effort was acknowledged.

Qualtrics responses were individually checked for duplicates which might indicate more than one submission from the same source. No duplicate submissions were identified and data were anonymised through removal of the IP addresses. The questionnaire data were then exported from Qualtrics to SPSS (Statistical Package for the Social Sciences) version 22 for data analysis, and postal and emailed responses were added by the researcher. The data were manually checked and coded for missing and inapplicable

items. Analysis focused on frequency and descriptive statistics for this data. Statistics including means and percentages, were calculated as appropriate, for all variables. This allowed development of an initial understanding of the data.

The qualitative data which identified lists of the KPI's in use, were transferred to a spreadsheet in Microsoft Excel. The KPI's were grouped into organisational, clinical, field specific and patient experience KPI's (Appendix 17). This provided an overview of KPI use in the UK and ROI. Finally, the descriptive qualitative data related to organisational processes were transferred into a second Excel spreadsheet. This acted as a master document for each participant's data set. The responses of each participant were allocated a unique code, which would allow tracing back to the original response if required. All of the data sets were then broken down and grouped by question. Summative content analysis was then applied to the data whereby the content of the open text box responses were colour coded and message elements such as words or phrases were counted to determine emphasis and themes of various topics, followed by the interpretation of the underlying context (Hsieh and Shannon 2005). Appendix 18 presents a sample of the content analysis. The overall findings from the phase one analysis then focused the information sought, and suggested analytic paths for phase two (Sandelowski 2000).

4.3.4 Establishing quantitative rigour

A questionnaire is a measurement tool composed of questions designed to help answer an overarching research question and areas of interest (Moule and Goodman 2014). While they aim for objectivity they are constrained by the honesty of participant's responses (Polit and Tatano Beck 2014). Before circulation of a questionnaire, validity and reliability should be checked, as these can influence the quality of the data obtained (Pallant 2013; Parahoo 2014).

Validity

There are various types of validity including external and internal validity. External validity refers to the ability to generalise the findings to a wider population and this has been addressed in the quantitative sampling already discussed. Internal validity is the level of confidence that we can place in the cause and effect relationship in a study

(Parahoo 2014). Thus, internal validity is only relevant in studies that try to establish a causal relationship and was not applicable as the questions were mainly designed to achieve a description of the current situation. The validity of the questionnaire also refers to the extent to which it measures what it is supposed to measure. The main types of validity are acknowledged as: content validity - do the questions relate to the topic; face validity - from the participants perspective are the questions relevant to the topic; criterion validity - how well one variable predicts an outcome based on information from other variables; and construct validity - the degree to which it measures what it says it is measuring, this relates to the ability to be able to generalise the findings to a wider population (Pallant 2013; Parahoo 2014). The questionnaire design did not lend itself to criterion or construct validity as it was a new tool and the information sought did not strongly aim to compare or predict. However, face and content validity were tested using a pilot study, when the questionnaire was disseminated to DoNs outside the UK. The questions originated from the literature on the topic (Timmins 2015) and the participants were deemed to understand what was being asked in the questionnaire by way of their role as senior nurses responsible for quality and performance entailing extensive use of KPI's. While they were not asked to formally rate the relevance of each question to the topic, an open text box was added to the pilot questionnaire requesting feedback on issues such as questions that were not clear or easily understood (Timmins 2015).

Reliability

Reliability refers to the extent to which a questionnaire measures what it is supposed to measure in a reliable way (Jones and Rattray 2015) and for this several statistical tests are available; the test-retest, inter-rater reliability and internal consistency of reliability of a scale (Pallant 2013; Jones and Rattray 2015). Test-retest considers if the questionnaire will provide the results if administered in the same situation over a short time frame. This was not appropriate for use in phase one for a number of practical reasons, which included pilot feedback that identified the enormity of documenting all the KPI's in use and therefore an anticipated low response rate to re-testing owing to time pressures on directors of nursing (American Educational Research Association *et al.* 1985; Kelly *et al*. 2015). Additionally, the factual nature of the questions with no requirement to measure attitude or the same construct more than once, ruled out the possibility of using inter-rater reliability and internal consistency. While conceding that none of the reliability tests proved feasible, it is argued that there can be validity without

reliability, if reliability is considered as consistency among independent measures (Moss 1994). In this way inconsistency in the responses given did not invalidate the questionnaire, but rather created puzzles to be solved by searching for a more comprehensive understanding (Moss 1994). This was the role undertaken by the qualitative second phase.

4.4 PHASE TWO

Building on the key quantitative findings in phase one which used a mainly deductive approach to explore the use of KPI's across a large population, phase two employed a qualitative inductive approach. This phase, which took 'priority', focused on addressing objectives two and three. Digitally recorded semi-structured interviews were utilised as a method to gain nurses and midwives perceptions of the findings of interest from phase one. They provided a means of exploring the complex organisational contexts within which the KPI's were being used, in greater depth.

4.4.1 Data collection method

Data collection in phase two involved the use of semi-structured interviews which were undertaken by the researcher who was a skilled facilitator. Data collection took three months beginning at the end of July 2016 and finishing at the end of October 2016.

Semi-structured interviews

The interview guides developed in this study were derived from the literature and key findings of the quantitative phase (Appendix 10). Interviews have been identified as the preferable option when "gathering data from people with expertise dealing with complex topics" (Hitchcock *et al*. 2015, p.6) Semi-structured interviews allowed for a range of topics to be covered while encompassing the flexibility to move from one topic to another depending on cues from the interviewees (Parahoo 2014; Yin 2014). Additionally, the use of open ended questions provided the researcher with the opportunity to ask additional questions, as well as allowing the participants the freedom to express their views in their own terms (Cohen and Crabtree 2006; Parahoo 2014). There was no defined order to the questions as participants were encouraged to engage in a

conversational narrative and their responses then guided the order (Dearnley 2005). This permitted greater exploration of identified key findings and sought to gain participants perceptions of KPI use in the context in which they worked. The semi-structured interviews were digitally recorded and field notes were made immediately after the interviews. In addition to points of interest for possible follow up in other interviews, the researcher's initial thoughts were detailed. If necessary during the interview the researcher restated information provided to seek clarity of meaning (Harper and Cole 2012). When the interviews were completed the participants were provided with a certificate of contribution to research incorporating a reflective account template (Appendix 11). They then had the opportunity to use this as evidence to contribute towards their continuing professional development.

Pilot study

The interview questions were tested prior to the commencement of data collection. This allowed for the questions to be refined and facilitation skills refreshed (Tod 2015). It also helped to identify practical issues that could be addressed in advance and provided an opportunity to practise the use of the recording equipment. Two fellow PhD students who were practising nurses consented to take part in the pilot interviews. They both worked at managerial level so had some knowledge of KPI use. In addition to confirming the potential effectiveness of the questions these nurses were asked to comment on their clarity and the general flow of the interview structure. Following the pilot some small amendments were made to enhance the wording of the questions to make them more conversational (Appendix 10).

4.4.2 Sampling

Whilst authors would argue that there is no clear guidance for conducting purposeful sampling in mixed methods studies (Guetterman 2015; Palinkas *et al*. 2015), a significant number of strategies for selecting participants in qualitative research were identified (Miles and Huberman 1994; Patton 2015). However, Maxwell (2013) would argue that they are almost all purposive in nature. Purposive selection involves the deliberate selection of participants who can provide the richest source of information to contribute to answering the research question (Creswell 2014; Morgan 2014). Morgan (2014) identifies four strategies for purposive selection all of which essentially rely on specifying

appropriate data sources: (i) sources of *specific information*; (ii) sources which would help develop *theory and applications*; (iii) sources suitable for *systematic comparisons;* and (iv) *defining criteria*. Nevertheless, Morgan (2014) states that three of the four are more complex variations of the principal strategy. Therefore, this principal strategy, which involved the defining of criteria, was chosen as the most appropriate fit for both initial selection of organisations and then of their participants.

Organisational selection

Based on points of interest arising from analysis of the first phase, it was determined that interviews undertaken with nurses and midwives working at executive, senior manager and clinical level within the selected organisations, would be of the most benefit. However, it was not deemed feasible to conduct interviews in all thirty-nine of the organisations that volunteered. Patton (2002) argues for a pragmatic approach to qualitative sample size, stating that there is no recommended number but rather this is dependent on the available alternatives when the purpose, resources and time scale are considered. Additionally, Taylor and colleagues state that "an N of 1 can be just as illuminating as a large sample" (Taylor *et al*. 2016, p.106). More recently Patton (2015, p.313) expressed the view that:

> "The validity, meaningfulness and insights gained from qualitative inquiry have more to do with the information richness of the cases selected and the observational/analytic capabilities of the researcher than with sample size".

Criteria were therefore identified for organisational selection: (i) willingness to participate, (ii) completion of all sections of the questionnaire (to permit informed selection by the researcher), (iii) use of a range of KPI's (to enable exploration of KPI use across as wide a range as possible) and (iv) evidence of KPI use to improve practice. Ten of the thirty-nine organisations met these criteria and the DoNs were provided with information on the phase two process. They were asked to confirm if they were still willing to take part. One organisation withdrew at this point. Subsequently, one further organisation withdrew just prior to their interviews beginning due to unforeseen circumstances.

Participant selection

The DoNs of the selected organisations were asked to appoint a local collaborator to liaise with the researcher for governance processes and to identify potential participants. Based

on the large number of maternity KPI's identified in phase one, and lesser number of community KPI's, the local collaborators were asked to include clinical managers working in these settings if the services were provided. Selection criteria for participants included willingness to take part and involvement in KPI use. This ensured that the experiences of the participants would contribute to a deeper understanding of KPI use in healthcare organisations. Local collaborators were provided with a participant invitation and information leaflet to disseminate to those nurses and midwives who met the criteria (Appendix 12). Researcher contact details were included for anyone seeking further information. Local collaborators were asked to forward contact details of potential participants to the researcher. This helped to minimise researcher bias in the selection of participants, whilst collaborator bias was minimised pre-interview, when participants were contacted by the researcher to confirm willingness to participate. This also provided an opportunity for the researcher to answer any questions and to arrange a suitable time and place for the interviews.

4.4.3 Data analysis

The six-step thematic analysis framework devised by Braun and Clarke (2013) (Table 4.4) was used as an inductive approach to analysis, allowing the exploration to stay as closely linked to the data as possible. This also ensured that the full breadth of participant perceptions of KPI use was captured. Braun and Clarke (2013) view thematic analysis as the foundational method of qualitative analysis arguing that it was sufficiently flexible to be applied across a range of theoretical and epistemological approaches, and provided a means of identifying, analysing and reporting themes, or patterns, within the data (Braun and Clarke 2013).

The qualitative data were transcribed verbatim by the researcher which aided the first step in the thematic framework through immersion into the data. As with most qualitative research methods, analysis occurred simultaneous to data collection; it was not left until the end of data collection (Houser 2008; Gerrish and Lacey 2010). This allowed for continuous comparisons to be made and the identification of themes for further development. Therefore, steps two and three began straight away to develop the initial codes and then themes which were recorded in a database. The codes are basic elements of the raw data upon which broad themes are developed. A theme is the label or name

given by the researcher, to an important topic which appears as some form of pattern in the data and relates to the research question (Braun and Clarke 2013). Furthermore, Braun and Clarke (2006) argue that it is researcher judgement which determines what a theme is. To support judgement of the codes and themes, the analytical process was discussed within the supervisory team. Where differences of opinion were identified in the codes and themes selected, the researchers worked together to seek resolution. As more data were analysed, the researcher created broader themes, which were agreed to be an accurate reflection of the data. Finally, the researcher selected verbatim data extracts for reporting to vividly illustrate the findings of the analysis (Braun and Clarke 2013).

Table 4.4 Phases of thematic analysis

Phase	Description of the process
1. Familiarisation with your data:	Transcribing data (if necessary), reading and rereading the data, noting down initial ideas.
2. Generating initial codes:	Coding interesting features of the data in a systematic fashion across the entire data set, collating data relevant to each code.
3. Searching for themes:	Collating codes into potential themes, gathering all data relevant to each potential theme.
4. Reviewing themes:	Checking the themes work in relation to the coded extracts (Level 1) and the entire data set (Level 2), generating a thematic "map" of the analysis.
5. Defining and naming themes:	Ongoing analysis to refine the specifics of each theme, and the overall story the analysis tells; generating clear definitions and names for each theme.
6. Producing the report:	The final opportunity for analysis. Selection of vivid, compelling extract examples, final analysis of selected extracts, relating back of the analysis to the research question and literature, producing a scholarly report of the analysis.

(Braun and Clarke 2013)

4.4.4 Establishing qualitative rigour

While quantitative research measures effect, and demands control and avoidance of bias in its subject matter, qualitative research, with its focus on understanding meaning,

acknowledges the potential for bias and requires honesty and reliability to address the validity of the findings (Houser 2008). Hence rigour in qualitative approaches is often discussed in terms of the trustworthiness of the research, and various strategies or criteria can be applied to verify this and ensure transparency throughout the research process (Sandelowski 1993; Morse *et al.* 2002). Despite Rolfe's (2006) argument that consensus on quality criteria for qualitative research was unlikely to be reached due to disagreement on ideology, many researchers favour Guba's (1981) assessment criteria (Shenton 2004). Therefore, these were employed to verify the rigour of the second phase. Guba and Lincoln (1989) recommended that the criteria of credibility (internal validity), dependability (reliability), and transferability (external validity) were met to address the issue of validity in qualitative research. In addition, they stated that confirmability, the requirement to demonstrate how interpretations were arrived at, would be achieved if these three criteria were met. It has also been recognised that establishing trustworthiness in qualitative research is complex and thus these criteria should be closely examined and addressed (Sandelowski 2000).

Credibility

As a subjective approach, the researcher seeks to analyse inductively, deriving meaning from the participant data. For this reason it is important to be transparent about the processes involved in the collection and analysis of the data. Additionally, Lathlean (2015) states that in nursing research the researcher is often a member of the same professional group as the participants, and therefore needs to be especially conscious of the effect this might have on any aspect of the process. This could range from shaping the direction of the study (Creswell 2014), to influencing interpretation of the data (Lathlean 2015; Topping 2015). To address this it is essential that the researcher maintains active self-awareness (Guba and Lincoln 1989). All transcriptions were read against the recordings to double check the accuracy of the transcribing. Monthly, or more frequent, recorded supervision sessions were maintained for the duration of the study. Supportive challenge was provided as required and minutes of the discussion and decisions that were made were drawn up. The identification of themes was debated with the supervisory researchers and consensus was reached when differences of opinion arose. Additionally, for Shenton (2004), credibility also arises from the willingness of each participant to take part thus the information was freely given.

Dependability

Dependability aims to show indications of stability and consistency in the process of inquiry and is usually evidenced by the documentation of an audit trail (Sandelowski 1986; Riege, 2003; Koch 2006). In addition to the clear evidence trail provided by this thesis, a thematic analysis framework clarified the interpretation process, coding of the quotations permitted the data to be tracked back to the source for verification, and an audit trail of the thematic process was provided.

Transferability

Transferability relates to the similarity between contexts which impacts on the ability to transfer findings. Thus, it is difficult to establish trustworthiness in this respect within qualitative research due to the unique nature of the research environments and situations (Guba and Lincoln 1989). Sandelowski (1986) suggests that these criteria would be met when the reader can view the research findings as meaningful and applicable in terms of their own experiences. To achieve this, clear inclusion criteria for the organisational and participant samples are provided along with the time scale for data collection, and rich descriptions of the contexts are presented in chapter six. This afforded sufficient evidence to allow others to judge the transferability of the findings to their own contexts (Guba and Lincoln 1989).

4.5 ETHICAL ISSUES AND GOVERNANCE

Approval for phase one of this proposal was granted by the Ulster University Research Governance Filter committee and by the host NHS organisation. In addition to approval being sought from the university prior to phase two, approval was also sought from the regional NHS research coordinating bodies. A research passport was obtained in line with requirements in England. No ethical issues were raised. Following this, approval was sought and granted from the Research and Development offices of the organisations involved, following their research governance protocols.

In this study the prominent ethical issues included anonymity, confidentiality, informed consent and non-maleficence (Parahoo 2014).

- **Anonymity** – occurs when the participants cannot be linked to their data (Polit and Tatano Beck 2014). Anonymity of the organisations during phase one was assured in

the participant information sheet. The IP address (the link with the participant's email address) which was automatically recorded by the software system Qualtrics, was deleted after data collection and checks for duplicates was completed. In phase two, anonymity was assured for interviewees through anonymisation of the transcribed data.

- **Confidentiality** – relates to the right of participants to privacy. Confidentiality regarding the content of the completed questionnaires was assured as the questionnaires were anonymous. However, in qualitative research additional care needs to be taken to protect participants' identity due to the in-depth nature of the data collected (Polit and Tatano Beck 2014). In addition to the transcriptions being anonymised, interviewees in phase two were assured of confidentiality through reassurance that no information would be publicly reported in such a way as to identify them and that the data would only be accessed by the supervisory team (Polit and Tatano Beck 2014).
- **Consent** - Informed consent should be fundamental to all research undertaken (International Council of Nurses 2003). This entails participants having sufficient information about the study to make an informed choice as to whether they wish to take part. In phase one, a letter of invitation and participant information leaflet (Appendix 8 and 9) were emailed to the key informants along with the questionnaire. It was highlighted in the participant information sheet that participation was entirely voluntary. Consent to participate was assumed if the questionnaire was returned (Jones and Rattray 2015). In phase two, all participants were fully informed through an information leaflet (Appendix 12) sent directly to them prior to the interviews. This outlined the purpose of the study, the proposed use of digital recording during the interview, confidentiality, anonymity within the data collected, and the participant's right to withdraw from the study at any point. The participant then had time to consider what was involved and to request further information before agreeing to participate. On the day of the interview the participant's understanding of their role was clarified and written consent sought (Appendix 13). For the telephone interviews written consent was obtained prior to the telephone interview and followed up with verbal consent obtained at the beginning of the interview.
- **Non-maleficience** – relates to the principle of freedom from harm. In theory this may seem easy to adhere to but in practice it is more difficult, with some risks being less

obvious than others (Johnson and Long 2015). Freedom from harm not only refers to physical harm but also to psychological harm that may occur because of the research (Parahoo 2014). Within the qualitative phase of this study there was a risk that the principle of non-maleficence could be breeched. Although the risk was small for the topic under discussion, generation of interactive dialogue poses a risk that subject matter will be raised which could not have been anticipated and which has the potential to cause harm to the participant/s. A debriefing period after the interviews allowed the participants the freedom to ask questions and discuss anything of concern. The information sheet also contained the contact details for their occupational health department. Potential benefits to participants were highlighted, including the opportunity for the interviewee to discuss their personal situation with a friendly, objective colleague and the satisfaction of knowing they are contributing to research that may help others (Polit and Tatano Beck 2014; Johnson and Long 2015). Risk to the researcher was small but supervisory and local collaborator support was available if needed.

- **Data security** - All data were stored on a university computer which was password protected and in a locked office. Hard copies of data and posted questionnaires were stored in a locked filing cabinet in the same office. Digital recordings were downloaded the same day and deleted from the recorder. Storage and archiving of information following closure of the study was in line with the Ulster University's procedures on research data. Only the researcher and supervisory team had access to the research data.

4.6 ENSURING METHODOLOGICAL RIGOUR

Essentially rigour refers to the quality of the research process. It originated in the empirical positivistic realm as the concepts of validity and reliability (Curtis and Drennan 2013; Parahoo 2014). Whereas, for those with alternative worldviews, rigour is viewed in terms of trustworthiness, legitimacy, believability and truth (Sandelowski 1993; Cutcliffe and McKenna 2002; Denzin and Lincoln 2011). However, the issue of rigour in mixed method studies has resulted in on-going debate about how best to ensure high quality research and the criteria which should be applied to assess this (Morse 2003; O'Cathain 2010; Morgan 2014). It has been suggested that due to the different epistemological backgrounds in mixed methods, qualitative and quantitative approaches

require their own assessment criteria, while others argue that this only serves to cause confusion (Lincoln and Guba 1985; Sandelowski, 1993; Rolfe 2006). However, development of an appraisal framework specific to mixed methodology, which is comprehensive enough to assess the variety of studies conducted without causing confusion, has proved difficult. O'Cathain's (2010) critical appraisal framework contained forty-four criteria (which the author herself stated was too many), and does not meet the call for a framework that is easy and clear to use (Heyvaert *et al*. 2013). Rolfe (2006), on the other hand, queries the relevance of any set criteria and there is disagreement about whether quality should be assessed during a study or afterwards (Sandelowski, 1993; Morse 2003).

Of further consideration was the understanding that in mixed methods, the study of the same phenomenon through multiple methods help corroborate the findings; often referred to as triangulation (Morse 2003; Creswell 2014). Triangulation is claimed to enhance the findings of the research (Teddlie and Tashakkori 2009) and provided a means of balancing the objective data from the questionnaire, with the subjective data from the interviews (Mertens 2003). In this way both methods complemented each other, building on the other's limitations such as, the need to understand the context from which the factual quantitative data arose, and the use of the quantitative data to substantiate the perceptions gained from the qualitative findings. Together, the methods used produced findings that offered a more comprehensive understanding of the research question (Turnbull and Lathlean 2015). However, while various authors highlighted the appeal of triangulation (Sandelowski 1995; Morse *et al.* 2002; Denzin and Lincoln 2011), Sandelowski (1995) warned it was not a solution for everything and cautioned against its use as a means of indicating that more than one method was used. Furthermore, although triangulation may be proposed as a means of increasing rigour and especially validity, based on the notion that if the findings converge they must be legitimate, problems occur if the findings diverge or raise discrepancies (Turnbull and Lathlean 2015). As an acknowledged concern, discrepancies were monitored for, but rather than being seen as a problem, divergence was viewed as an opportunity for further exploration to increase understanding. However, in this study more convergence than divergence emerged from the findings.

Due to differing opinions about how the rigour of mixed methods studies should be assessed, Heyvaert *et al.* (2013) argue against a single set of criteria for their appraisal. With no current consensus on the criteria that should be used to evaluate the quality of mixed methods studies (Heyvaert *et al*. 2013), this researcher chose to broadly discuss how rigour is established in: i) quantitative methods (section 4.4.4); and ii) qualitative methods (section 4.5.4). However, it is also acknowledged that a mixed methods study is more than the sum of its qualitative and quantitative elements, requiring comprehensive critical appraisal (O'Cathain 2010; Creswell and Plano Clark 2011). Therefore, the researcher has also chosen a pragmatic framework to fulfil the need for an appraisal specific to mixed methods approaches (Table 4.5). Designed by Teddlie and Tashakkori (2009), this framework was considered to complement the study methodology because it combines a strong active orientation with a smaller philosophical orientation. Teddlie and Tashakkori (2003) recommend the terms 'inference quality' and 'inference transferability' for assessment of validity in mixed method studies. This is based on an argument that inferences are made in research regardless of whether the interpretation is inductive or deductive, thus the concept of 'inference' transcends quantitative and qualitative research (Teddlie and Tashakkori 2003; Onwuegbuzie and Johnson 2006). Inference quality refers to internal validity and credibility, while inference transferability refers to the concepts of external validity (quantitative research) and transferability (qualitative research) (Ihantola and Kihn 2011).

Table 4.5 Checklist of criteria for assessment of quality and interpretive rigour in a mixed methods study (Teddlie and Tashakkori 2009)

Aspects of inference quality	Research criterion	Indicator or audit	Location in the study
Design quality	1.Design suitability	Are the methods of study appropriate for answering the research question/s? Does the design match the research questions?	Justification for using a mixed methods approach is provided in chapter three and chapter four
	2.Design adequacy/ fidelity	2a. Are the procedures implemented with quality and rigour? 2b. Are the methods capable of capturing the meanings, effects, or relationships? 2c. Are the components of the design (e.g. sampling, data collection procedures, data analysis procedures) implemented adequately?	2a. The procedures are detailed in the methodology with accompanying evidence in the appendices. 2b. Chapter four explains the rationale for selection of the methods and chapters five and six present the study findings. 2c. Sampling and data collection are reported in chapter four with data analysis as per Braun and Clarke (2013), Hsieh and Shannon (2005) and SPSS. The study was supervised by experienced researchers. Progress of the study has been scrutinised on three occasions internal to the university, and procedures subjected to examination by the university research office and the research and development offices of eight healthcare organisations.
	3.Within design consistency	Do the components of the design fit together in a seamless manner? Is there "within design consistency" across all aspects of the study?	The research design is reported in section 4.3 with accompanying rationale. Methods followed the two-phase sequential exploratory design. Section 1.4 presents the thesis structure of this study.
	4.Analytic adequacy	Are the data analysis procedures/strategies appropriate and adequate to provide possible answers to research questions?	Analysis techniques are detailed in chapter four. Data analysis is present in chapters five and six. Chapters seven and eight present the findings and conclusions in response to the research question and objectives.

Aspects of inference quality	Research criterion	Indicator or audit	Location in the study
Interpretive rigour	5.Interpretive consistency	5a. Do the inferences closely follow the relevant findings in terms of type, scope, and intensity? 5b. Are multiple inferences made on the basis of the same findings consistent with each other?	5a. Chapter seven integrates the findings with clear reference to their point of origin. Each conclusion in chapter eight results either from the quantitative or qualitative findings or both. 5b. Findings have been peer reviewed and assessed by the supervisory team.
	6.Theoretical consistency	Are the inferences consistent with theory and the state of knowledge in the field?	Inferences are clearly referenced to the literature and underpinning theory of implementation science in chapter seven.
	7.Interpretative agreement	7a. Do other scholars reach the same conclusions on the basis of the same results (i.e. is there peer agreement?) 7b. Do the investigators inferences match the participants constructions	7a. Findings have been peer reviewed and assessed through university processes. Findings have been assessed by the supervisory team. 7b. Findings from both phases and the integration of their data has been peer reviewed. Findings have also been assessed through seminar presentations.
	8.Interpretive distinctiveness	Is each inference distinctly more plausible than other possible conclusions that can be made on the basis of the same results?	Conclusions in chapter eight have been reviewed and discussed with the supervisory team to ensure credibility.
	9.Integrative efficacy (mixed/ multiple methods)	Does the meta-inference adequately incorporate the inferences made from qualitative and quantitative strands of the study?	Overall conclusions achieved through integration of both data sets are reported in the discussion and conclusion chapters.

4.7 SUMMARY

The main consideration when planning a research methodology is that the approach chosen provides the most appropriate means of answering the research question (Creswell 2014; Morgan 2014; Turnbull and Lathlean 2015). This chapter has laid out the research design considered most effective for this study arguing how the use of mixed methods can provide a broader approach than other methodologies, and thus take into account the values and perceptions of the organisational context in which the research is conducted (Andrew and Halcomb 2009).

Chapter Five: Phase One Findings

This chapter will present the findings from phase one to include (i) the organisational profile of the sample group; (ii) the range of KPI's identified; and (iii) the operational processes reported. The chapter ends with an overview of findings that warrant further exploration in phase two.

5.1 RESPONSE RATE

A total of 77 valid questionnaires were received from the sample of 502 organisations, an overall response rate of 15%. Although this is reflective of the low response rates anticipated (Baruch and Holtom 2008; Anseel *et al*. 2010), it was considered sufficient for answering the research question. The questionnaire was not designed to allow conclusions to be drawn about the sample itself, so the rate of response was less important than obtaining a spread of responses which reflected the target population (Cook *et al*. 2000). Hence, it should be noted that there was representation from all five regions across the UK and ROI, which included hospital and community organisations providing a wide range of services. The full descriptive statistics for this quantitative data analysis are presented in Appendix 14. However, Table 5.1 presents a compilation of the 77 multiple-choice responses.

Table 5.1 Compilation of multiple-choice responses

Organisational Profile	**Responses**	
Q1. Participant organisations:	**Number**	**Percentage**
• England (n=165, 19% response rate)	32	42
• Northern Ireland (n=5, 100% response rate)	5	7
• Scotland (n=14, 50% response rate)	7	9
• Wales (n=8, 25% response rate)	2	3
• Ireland (n=310, 10% response rate)	31	41
Q2. Population size responses Range from 1 to 3.2 million, mean=165,904	68	88
Q3. Population areas covered per organisation:		
• Rural	7	9
• Urban	10	13
• Both	60	78

Q4. Services provided per organisation: • Acute • Community • Both	 15 19 39	 21 26 53
Q5. Areas of practice provided per organisation: • Adult • Midwifery • Children's • Learning disability • Community • Mental health	 70 57 60 34 48 31	 91 74 78 44 62 40
Q6. Total staff employed per organisation: • Under 2000 • 2001-5000 • 5001-10000 • 10001-15000 • 15001-20000 • Over 20000	 31 14 15 10 2 5	 40 18 19 13 3 7
Q7. Approximate number of nurses employed: • Under 1000 • 1001-3000 • 3001-5000 • 5001-7000 • 7001-9000 • Over 9000	 36 21 10 6 0 4	 47 27 13 8 0 5
Q8. Approximate number of midwives employed: • Under 1000 • 1001-3000 • Over 3000	 49 5 0	 91 9 0

Processes related to the use of *ORGANISATIONAL* KPI's	**Number**	**Percentage[3]**
Q9. Frequently cited organisational KPI's: • Agency and nurse bank usage (of 76 applicable) • Number of nursing vacancies (of 76) • Number of nursing absences (of 75) • Incidence of complaints specific to nursing care (of 76)	 61 67 65 62	 80 88 87 82

[3] Q9, 12, 13, 15, 18, 19, 23, 32 permit multiple responses therefore the aggregate response rates exceed one hundred.

Processes related to use of *ORGANISATIONAL* KPI's (cont)	**Number**	**Percentage**
Q10. Data collection methods used for organisational KPI's:		
• Agency and nurse bank usage - paper	5	8
(of 61 applicable) computer	34	56
both	22	36
• Number of nurse vacancies - paper	5	7
(of 67 applicable) computer	36	54
both	26	39
• Number of nurse absences - paper	3	5
(of 64 applicable, additional missing data×1) computer	40	62
both	21	33
• Incidence of complaints - paper	8	13
(of 62 applicable) computer	27	43
both	27	43
Q11. Frequency of data collection:		
• Agency and nurse bank usage - monthly or more often	57	93
(of 61 applicable) bi-monthly	0	0
quarterly or less often	4	7
• Number of nurse vacancies - monthly or more often	58	87
(of 67 applicable) bi-monthly	2	3
quarterly or less often	7	10
• Number of nurse absences - monthly or more often	62	95
(of 65 applicable) bi-monthly	0	0
quarterly or less often	3	5
• Incidence of complaints - monthly or more often	49	79
(of 62 applicable) bi-monthly	1	2
quarterly or less often	12	19
Q12. Collection of organisational KPI's by:		
• Agency and nurse bank usage – clinical staff	26	43
(of 60 applicable, additional missing data×1) admin/clerical	38	63
managerial	29	48
• Number of nurse vacancies - clinical staff	24	36
(of 66 applicable, additional missing data×1) admin/clerical	33	50
managerial	41	62
• Number of nurse absences - clinical staff	22	34
(of 64 applicable, additional missing data×1) admin/clerical	37	58
managerial	41	64
• Incidence of complaints - clinical staff	26	42
(of 62 applicable) admin/clerical	33	53
managerial	40	65

Processes related to use of *ORGANISATIONAL* KPI's (cont)		**Number**	**Percentage**
Q13. Collation/analysis of organisational KPI's by:			
• Agency and nurse bank usage – (of 57 applicable, additional missing data×3)	clinical staff	25	44
	admin/clerical	19	33
	managerial	45	79
	other	8	14
• Number of nurse vacancies - (of 66 applicable, additional missing data×1)	clinical staff	26	39
	admin/clerical	19	29
	managerial	49	74
	other	8	12
• Number of nurse absences - (of 64 applicable, additional missing data×1)	clinical staff	24	38
	admin/clerical	21	33
	managerial	51	80
	other	8	13
• Incidence of complaints - (of 60 applicable, additional missing data×2)	clinical staff	25	42
	admin/clerical	22	37
	managerial	43	72
	other	8	13

Processes related to the use of *CLINICAL* KPI's		**Number**	**Percentage**
Q15. Frequently cited clinical KPI's:			
• Incidence of pressure ulcers (of 76 responses)		65	86
• Assessment of nutritional requirements (of 75)		59	79
• Incidence of falls (of 76)		67	88
• Compliance with hand hygiene (of 76)		72	95
• Incidence of medication errors (of 75)		66	88
• Compliance with completion of NEWS (of 72)		53	74
• Prevalence of HCAI (of 75)		65	87
Q16. Data collection methods used for clinical KPI's:			
• Incidence of pressure ulcers - (of 65 applicable)	paper	14	22
	computer	24	37
	both	27	41
• Assessment of nutritional requirements - (of 59 applicable)	paper	18	30
	computer	17	29
	both	24	41
• Incidence of falls - (of 66 applicable, additional missing data×1)	paper	10	15
	computer	26	39
	both	30	46
• Compliance with hand hygiene - (of 71 applicable, additional missing data×1)	paper	13	18
	computer	21	30
	both	37	52

• Incidence of medication errors - (of 66 applicable)	Paper computer both	8 26 32	12 39 49
• Compliance with completion of NEWS - (of 53 applicable)	Paper computer both	10 17 26	19 32 49
• Prevalence of HCAI - (of 65 applicable)	Paper computer both	10 20 35	15 31 54

Processes related to the use of *CLINICAL* KPI's (cont)		**No.**	**%**
Q17. Frequency of clinical KPI data collection:			
• Incidence of pressure ulcers - (of 65 applicable)	monthly or more often bi-monthly quarterly or less often	59 0 6	91 0 9
• Assessment of nutritional - requirements (of 59 applicable)	monthly or more often bi-monthly quarterly or less often	51 0 8	86 0 14
• Incidence of falls - (of 66 applicable, additional missing data×1)	monthly or more often bi-monthly quarterly or less often	64 0 2	97 0 3
• Compliance with hand hygiene - (of 72 applicable)	monthly or more often bi-monthly quarterly or less often	60 1 11	83 1 15
• Incidence of medication errors - (of 66 applicable)	monthly or more often bi-monthly quarterly or less often	60 0 6	91 0 9
• Compliance with completion of NEWS - (of 53 applicable)	monthly or more often bi-monthly quarterly or less often	46 0 7	87 0 13
• Prevalence of HCAI - (of 64 applicable, additional missing data×1)	monthly or more often bi-monthly quarterly or less often	58 0 6	91 0 9
Q18. Collection of clinical KPI's by:			
• Incidence of pressure ulcers – (of 65 applicable)	clinical staff admin/clerical managerial	58 14 14	89 22 22
• Assessment of nutritional requirements - (of 59 applicable)	clinical staff admin/clerical managerial	54 7 8	92 12 14

• Incidence of falls - (of 66 applicable, additional missing data×1)	clinical staff admin/clerical managerial	56 12 16	85 18 24
• Compliance with hand hygiene - (of 72 applicable)	clinical staff admin/clerical managerial	61 12 18	85 17 25
• Incidence of medication errors - (of 66 applicable)	clinical staff admin/clerical managerial	53 12 18	80 18 27
• Compliance with completion of NEWS - (of 53 applicable)	clinical staff admin/clerical managerial	49 5 13	93 9 25
• Prevalence of HCAI - (of 65 applicable)	clinical staff admin/clerical managerial	58 10 15	89 15 23
Processes related to the use of *CLINICAL* KPI's (cont)		**No.**	**%**
Q19. Collation/analysis of clinical KPI's by:			
• Incidence of pressure ulcers – (of 64 applicable, additional missing data×1)	clinical staff admin/clerical managerial other	46 18 39 8	72 28 61 13
• Assessment of nutritional requirements - (of 59 applicable)	clinical staff admin/clerical managerial other	42 16 35 5	71 27 59 9
Incidence of falls - (of 66 applicable, additional missing data×1)	Clinical staff admin/clerical managerial other	43 20 43 7	65 30 65 11
• Compliance with hand hygiene - (of 72 applicable)	clinical staff admin/clerical managerial other	49 18 45 5	68 25 63 7
• Incidence of medication errors - (of 66 applicable)	clinical staff admin/clerical managerial other	41 15 49 5	62 23 74 8
• Compliance with completion of NEWS - (of 53 applicable)	clinical staff admin/clerical managerial other	38 13 32 4	72 25 60 8
• Prevalence of HCAI - (of 62 applicable, additional missing data×3)	Clinical staff admin/clerical managerial other	46 19 40 6	74 31 65 10

Patient experience KPI's	**Number**	**Percentage**
Q21. Organisations that collect patient experience KPI's (of 77 applicable):	60	78
Field specific KPI's	**Number**	**Percentage**
Q23. Organisations that use KPI's for specific practice:		
• Within mental health (of 56 responses)	21	38
• Within learning disability (of 59)	25	42
• Within children's (of 63)	40	64
• Within midwifery (of 61)	45	74
• Within community (of 58)	30	52
• Within other specific areas (of 58)	37	64
Systems used in KPI processes	**Number**	**Percentage**
Q32. Systems used to present KPI data (of 65 applicable):		
• Manual systems	29	45
• Balanced Score Card	34	52
• Standard database	37	57
• Custom designed IT system	42	65
• Other	14	22

5.2 ORGANISATIONAL PROFILES

The profiles of the respondents are presented in Table 5.2. Organisational response rates per country ranged from 100% in Northern Ireland to 10% in Ireland. Fifty-six per cent (n=43) of respondents served populations of less than 1000, while 33% (n=25) served populations of over 100,000. Organisations providing solely acute services made up 21% (n=15) of responses and solely community services - 26% (n=19) of responses, while just over half provided both (53%, n=39). The majority of organisations provided adult services (91%, n=70). Seventy-four per cent (n=57) and 78% (n=60) respectively provided maternity and children's services. Sixty-two per cent (n=48) of respondents cited the provision of community services while intellectual disability (44%, n=34) and mental health services (40%, n=31) were provided by less than half of the respondents.

Table 5.2 Organisational profile characteristics

		Number	Per cent of total
Responses per region	England	32	42
	Northern Ireland	5	6
	Scotland	7	9
	Wales	2	3
	Republic of Ireland	31	40
Population size served	≤ 1000	33	56
	1001 - 10,000	2	3
	10,001 - 50,000	2	3
	50,001 - 100,000	2	3
	100,001 - 500,000	15	25
	500,001 - 1 million	2	3
	> 1 million	3	5
Population served	Rural	7	9
	Urban	10	13
	Both	60	78
Services provided	Acute	15	21
	Community	19	26
	Both	39	53
Areas of practice[4]	Adult	70	91
	Midwifery	57	74
	Children's	60	78
	Learning disability	34	44
	Community	48	62
	Mental health	31	40
Total staff employed	≤2000	31	40
	2001-5000	14	18
	5001-10000	15	19
	10001-15000	10	13
	15001-20000	2	3
	≥20001	5	7
Number nurses employed	≤ 1000	36	47
	1001-3000	21	27
	3001-5000	10	13
	5001-7000	6	8
	7001-9000	0	0
	≥9001	4	5
Number midwives employed	≤1000	49	91
	1001-3000	5	9
	≥3001	0	0

[4] Organisations may provide more than one area of practice therefore the aggregate response rate exceeds one hundred.

5.3 OVERVIEW OF THE LISTED KPI'S

As discussed in chapter two, Table 5.3 below lists the criteria that define a KPI. Where possible, the results presented in this chapter are based on the evaluation of data that has been assessed as meeting the definition of a KPI, as per these criteria.

Table 5.3 Criteria used to define KPI's

Criteria	
1.	Evidence the nursing and midwifery contribution
2.	Define what is to be measured
3.	Have an evidence-based rationale
4.	Contribute to meeting an organisational goal
5.	Have a defined target
6.	Be easily understood and provide context
7.	Require information which is straightforward to collect from a legitimate source
8.	Lead to action, either to maintain consistency or to improve performance.

When these criteria were applied to the list of KPI's generated from the questionnaires it became clear that there was a lack of understanding about what was and what was not a KPI. Although 1058 data items were reported in the open text boxes, not all of these could be defined as KPI's. In addition, it was not possible to determine, based on the information available, whether all of these criteria applied to each KPI listed. To make the information more manageable a process of data cleansing and grouping was carried out for each list of KPI's (i) organisational; (ii) clinical; (iii) patient experience; and (iv) field specific (Figure 5.1).

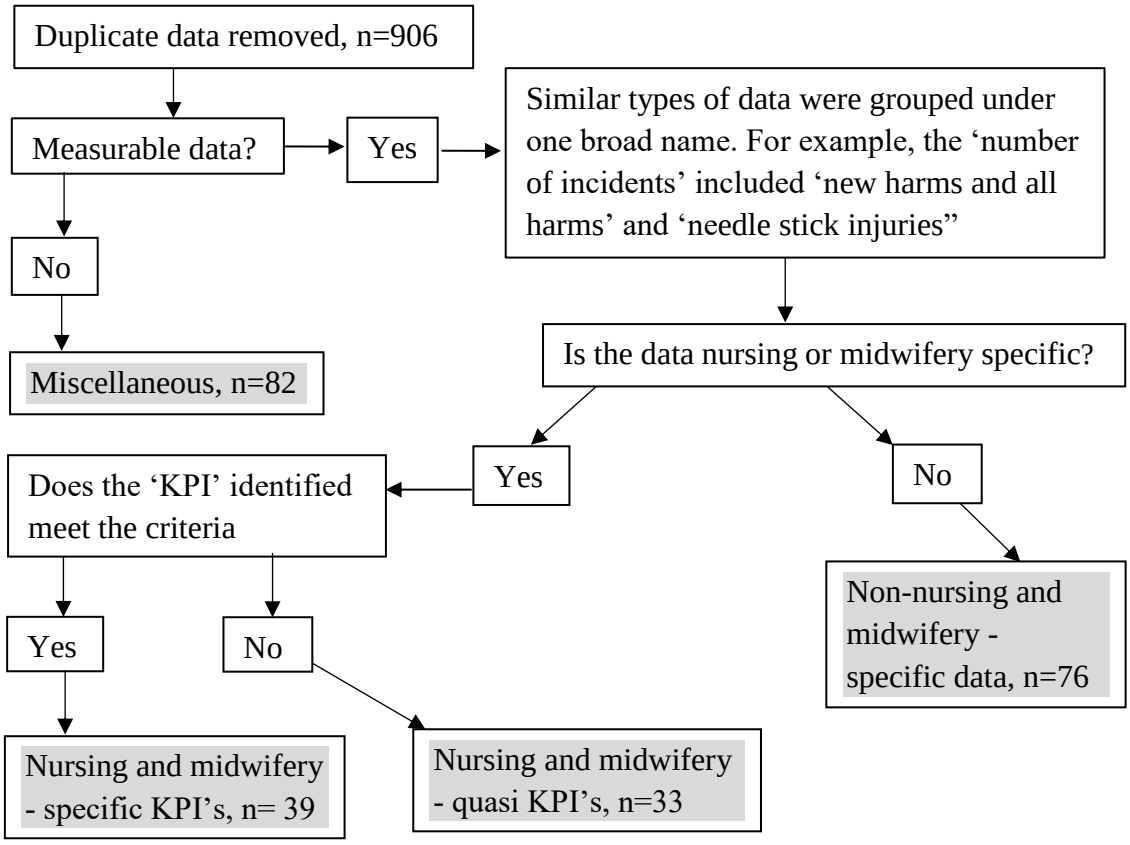


Figure 5.1 Flowchart of the cleansing and grouping process

This process resulted in the original data being split into four groups, of which two (nursing and midwifery-specific KPI's and quasi KPI's) are presented in the following tables: Table 5.4 – organisational KPI's, Table 5.5 – clinical KPI's, Table 5.6 – field specific and Table 5.7 – patient experience KPI's. When the data from these two groups was considered for comparison across the five regions it was noted that all regions used similar KPI's. Groups three (miscellaneous data) and four (non-nursing and midwifery data) are included in the appendix and discussed shortly.

The first column in each table below presents nursing and midwifery specific high-level KPI's – that is, those KPI's which are clearly defined primary measurements of the total available. There were 40 KPI's that were identified as specific to nursing and midwifery practice. Of these twenty-three KPI's were identified across the specified fields of practice, with the most numerous reported in maternity. Two respondents each listed over 100 maternity data items but this was subsequently reduced to n=14 KPI's after cleansing and grouping. Of the 48 respondents who provided community services, 14 provided data from which six community-specific KPI's were identified.

The second column presents nursing and midwifery specific quasi-KPI's – 'quasi' being defined as something which is almost but not completely the thing described (McIntosh 2011). Therefore, in this context they are data items which almost, but do not completely resemble, the study's specified criteria. These data items, although specific to nursing and midwifery, were not clearly identifiable as KPI's due to lack of a defining measurement or that were not high-level.

Table 5.4: Organisational nursing and midwifery specific and quasi-KPI's

Nursing and midwifery specific KPI's	Nursing and midwifery quasi KPI's
The number of compliments	Preceptorship of nursing students
Actual daily staffing percentage achieved against the planned level of staffing	Special leave. Maternity leave. Study leave
Number of nursing absences	Agency and nurse bank usage
Incidence of complaints specific related to nursing	New graduate retention
Validation of RN/RM professional registration with NMC (Nursing and Midwifery Council)	
Nurse/midwife supervision ratios	
Number of incidents	
The percentage of staff in post up to date with their mandatory training, by course name	
Number of nursing vacancies	
Staff turnover rates	
The percentage of employees who completed their pre- Personal Appraisal Development Review and PADR in the month due	

Table 5.5 Clinical nursing and midwifery specific and quasi KPI's

Nursing and midwifery specific KPI's	Nursing and midwifery quasi KPI's
Incidence of medication errors	Compliance with care bundles
Prevalence of infections/HCAI (any of the following: urinary catheters, ventilator pneumonia, central lines, MRSA, C Diff)	Right Patient, Right Blood Competency Assessment
Incidence of falls	Compliance with documentation standards
Number of nurse prescribers who prescribe	Compliance with completion of NEWS
Incidence of pressure ulcers	Nursing assessment compliance
	Assessment of nutritional requirements
	Continence screening
	Blood transfusion errors
	NMC Referrals
	Pain scores
	Compliance with hand hygiene

Table 5.6 Nursing and midwifery field specific and quasi KPI's

Nursing and midwifery specific KPI's	Nursing and midwifery quasi KPI's
Mental health KPI's	**Mental health KPI's**
Number of service users and staff who are participating in WRAP (recovery focussed initiative)	Mental health advocacy
Number of special observations	Therapeutic interventions 1:1
Children's KPI's	**Learning/intellectual disability**
Workforce establishment holding an accredited post registration qualification in specialist neonatal care	Health needs assessment on an annual basis
Midwifery KPI's	Compliance with our policy around use of passport
Smoking rate at time of birth	**Children's KPI's**
Number of bookings for antenatal care	Children's Triage Score
Midwife to births ratio	Prevention of over infusion of intravenous fluids in neonates
PPH rate (post-partum haemorrhage)	**Midwifery KPI's**
Rate of booking BMI -various classifications	Newborn hearing screening
Number and type of perineal tears	Health and Social Assessment
Percentage of VTE forms completed on admission and after 3 days	Electronic fetal monitoring
Number of mothers seen within 72 (or 48hrs) following discharge from hospital	Normal Births without intervention (instrumental)
Percentage of women receiving 1:1 care in labour	Neonatal bloodspot screening
Percentage of times co-ordinator is supernumerary	**Community KPI's**
80% of women get access to antenatal checks before week 12	Child immunisations
Suturing commenced within 1 hour of delivery	**Other KPI's**
Number of mothers exclusively breast feeding on discharge from hospital	Compliance with end of life care plan
Number of mothers not exclusively breast feeding on discharge from hospital	
Community KPI's	
Breast feeding rates at three months	
Breast feeding rates at nine months	
Percentage of early years health reviews carried out by health visitors within the timescale	
Number of children reaching 10 months who have had a developmental assessment	
Number of mothers not exclusively breast feeding at 3 months	
Neonatal blood spot screening results received by 12 days post sample taken	

Table 5.7 Patient experience specific and quasi-KPI's

Nursing and midwifery specific KPI's	Nursing and midwifery quasi KPI's
Call bell response time	Were you treated with care and compassion?
	Patient satisfaction with: emotional support; comfort; nutrition and eating experience; communication; information provided; hand hygiene; respect; pain control; attitude
	Percentage of person-centred plans

The third group included the miscellaneous data (Appendix 15) and illustrates the wide variety of data reported in the open text boxes assigned for the listing of KPI's. These were collectively identified as 'miscellaneous' and classified under six broad headings comprising:

- information pertaining to the point of origin for KPI's, including many agencies external to the organisations
- data collection methods
- data reporting methods
- data suggestive of care planning tools
- general statements of opinion
- data which was unclassifiable to any of these.

Comments were also included in seven of the open text boxes requesting the listing of KPI's. These related to the number of KPI's which DoNs were required to collect data on. For example, "a significant number over a range of areas", "lots more" and "too many and even more coming".

The fourth group comprised the non-nursing and midwifery data items. As it is not in the remit of this study to determine whether these non-nursing data items are KPI's or not, they are presented in their totality in Appendix 16. Appendix 17 provides a sample illustration of the grouping process.

5.4 OPERATIONAL PROCESSES

To increase understanding of the processes involved in KPI use, the data obtained from the multiple-choice questions and the open text boxes are presented following the order laid out in the KPI performance process model (Artley and Stroh 2001). Findings from

the multiple-choice and open text boxes have been integrated in the following sections where relevant. Direct quotations from respondent (R) text responses have been coded to ensure anonymity. Appendix 18 presents a sample of the content analysis undertaken for the open text box questions.

5.4.1 Factors which influenced organisational KPI selection

Seventy per cent (n=37) of 53 respondents to this question indicated that meeting national requirements was a factor in deciding which KPI's to use. Quality and safety issues were specified as factors influencing KPI selection by 55% (n=29) of respondents, while 6% (n=3) stated that ease of data collection was taken into consideration. It was also noted that KPI selection resulted from some form of organisational listening or learning that occurred through patient and staff feedback, research, discussion in professional forums, incidents (national and local) and safe-guarding referrals. Four per cent (n=2) reported that KPI's were "chosen by clinical staff" (unique identifier – RV1).

When asked if they used patient experience KPI's, 78% (n=60 of 77 respondents) answered positively. However, many of the KPI's listed as examples were in fact methods of collecting patient experience data such as surveys, questionnaires and audits (Appendix 15). Therefore, following the cleansing and grouping process, only one of the original 118 patient experience data items was identified as a measure of patient experience – "call bell response time" (Table 5.7).

5.4.2 KPI data collection and analysis

Questions relating to data collection and analysis focused on the processes involved in the use of KPI's in organisational and clinical practice, and were based on the four organisational and seven clinical KPI's which were included in the questionnaire as examples of those most frequently cited in the literature:

Frequently cited organisational KPI's –

1. Agency and nurse bank usage
2. Number of nursing vacancies
3. Number of nursing absences
4. Incidence of complaints specifically related to nursing care.

Frequently cited clinical KPI's –

1. Incidence of pressure ulcers
2. Assessment of nutritional requirements
3. Incidence of falls
4. Compliance with hand hygiene
5. Incidence of medication errors
6. Compliance with completion of national early warning scores (NEWS)
7. Prevalence of infections/HCAI (any of the following: urinary catheters, ventilator pneumonia, central lines, MRSA, C Difficile)

Organisational KPI's

On average, 84% (n=65) of the 77 organisations collected the four organisational KPI's which were included in this multiple-choice question (Figure 5.2). A majority (92%, n=71) collected data on the cited organisational KPI's on a monthly (or more frequent) basis. Data collection was mainly carried out by managers, except for data on agency/bank usage which was more often collected by administration/clerical staff (Figure 5.3). Nine per cent (n=7) stated that all three groups of staff - clinical, clerical and managerial - would collect this organisational data. When asked who analysed the organisational data, 76% (n=59) of respondents identified managers as being responsible, while clerical staff were least likely to analyse the data. Thirteen per cent (n=10) of these organisations employed an 'other' to analyse KPI data.

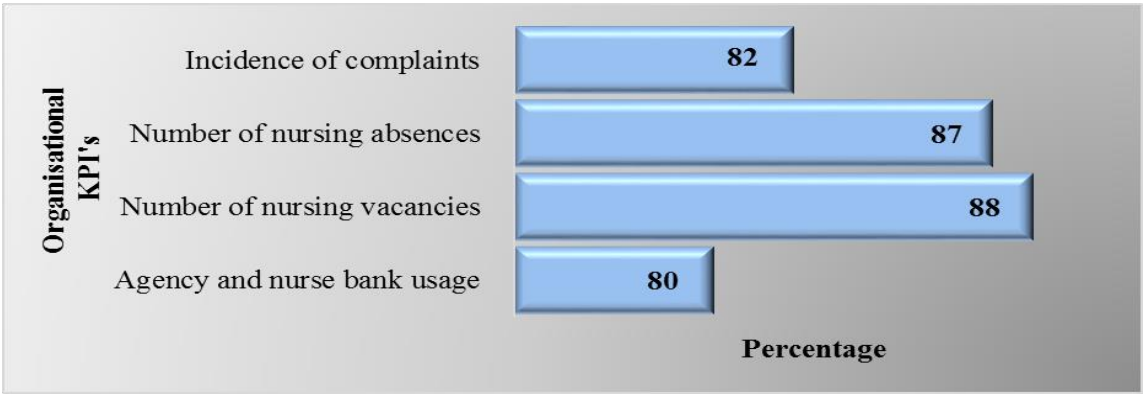


Figure 5.2 Percentage of organisations using the frequently cited organisational KPI's

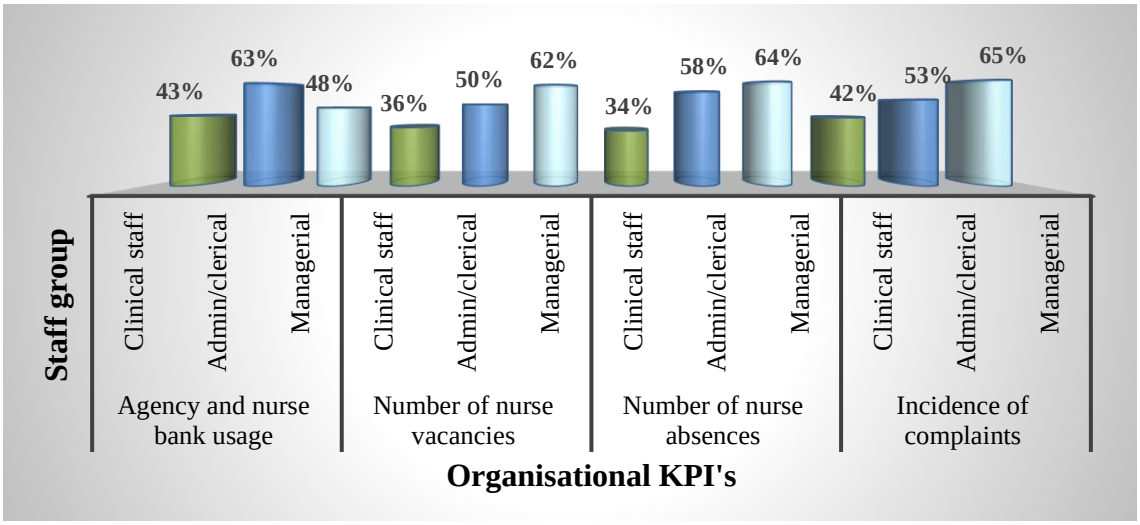


Figure 5.3 Staff groups collecting organisational KPI's

Clinical KPI's

On average, 84% (n=65) of the 77 organisations used the seven clinical KPI's included in the questionnaire. Figure 5.4 demonstrates that the clinical KPI's used by respondent organisations are representative of those most frequently cited in the literature. Collection of data on National Early Warning Scores (NEWS) was relatively less common (74%, n=57) which is possibly reflective of the low use of this KPI in the community setting. Of the 14 responses from community-only organisations, two collected data on NEWS. Compared to organisational KPI's where the collection of data is undertaken mainly by managers (Figure 5.3), clinical KPI data is primarily collected by clinical staff (avg 88%) (Figure 5.5), and mostly completed monthly or more often (avg 89%). Also, in contrast to organisational KPI's, clinical nurses and midwives (69%, n=53) as well as managers (64%, n=49) were the main analysts of clinical KPI data.

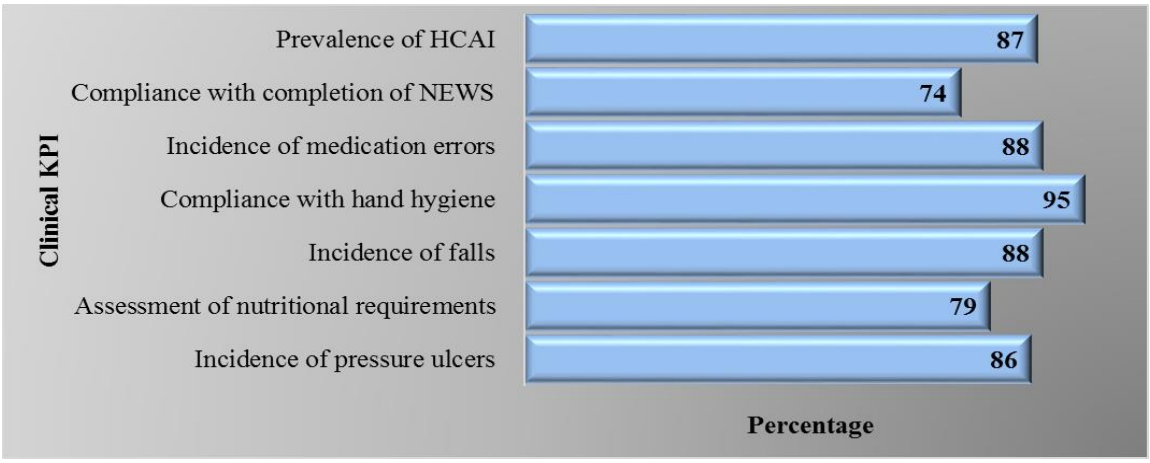


Figure 5.4 Percentage of organisations using the frequently cited clinical KPI's

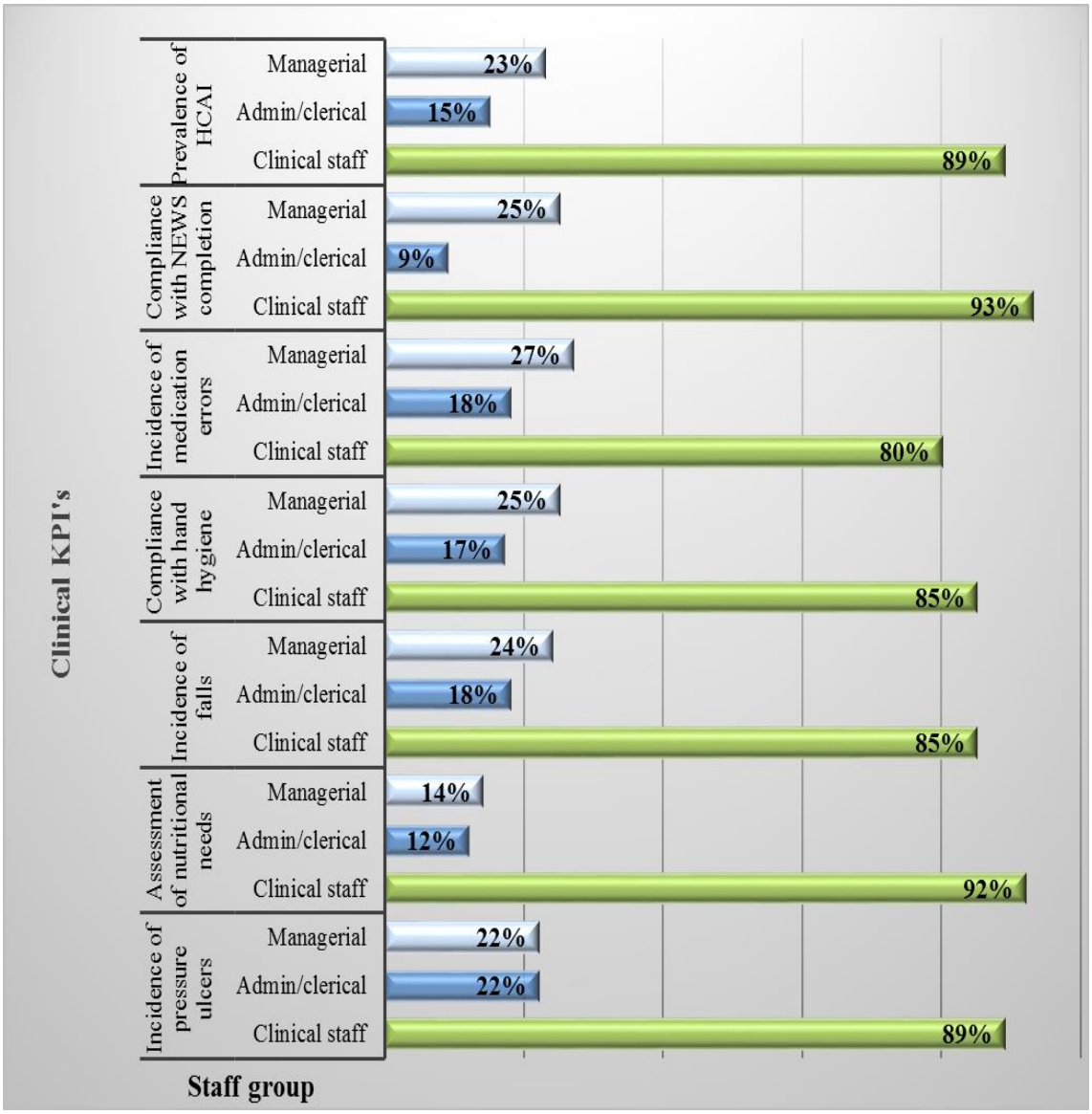


Figure 5.5 Staff groups who collect data on clinical KPI's

5.4.3 Systems used for the management of KPI data

Computer systems were the most popular method of data collection reported by the 77 respondents for organisational KPI's (Figure 5.6). However, the collection of clinical KPI data was most commonly reported to be through a combination of both paper and computer-based methods (Figure 5.7), with solely paper-based systems the least popular.

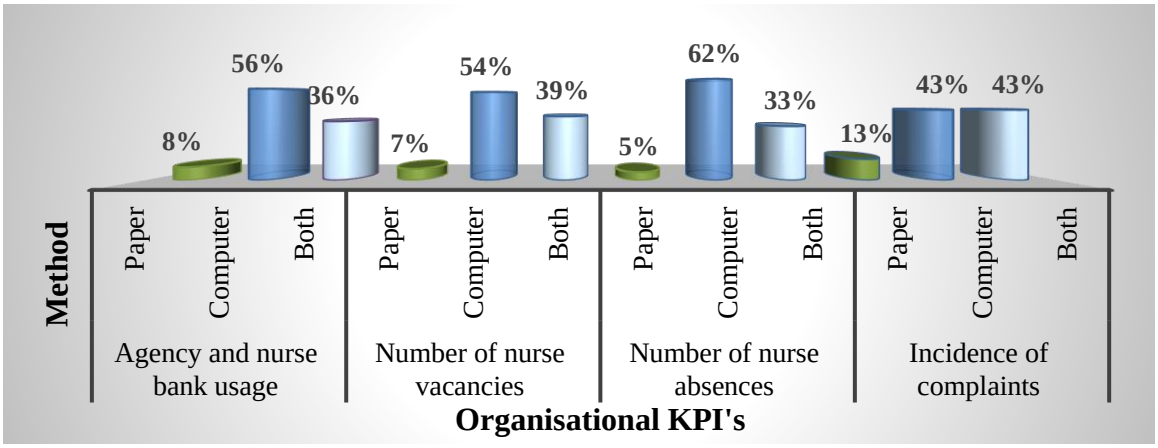


Figure 5.6 Data collection methods for organisational KPI's

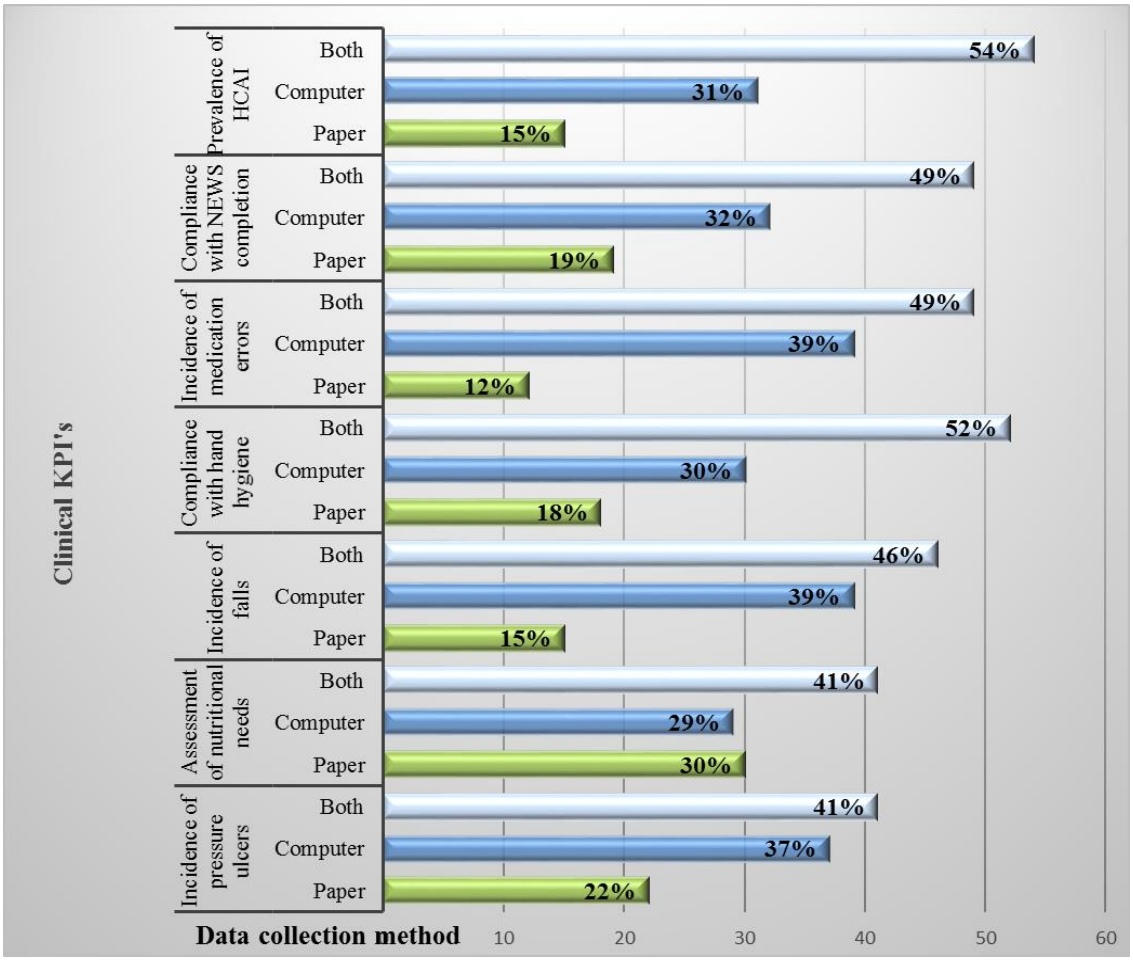


Figure 5.7 Data collection methods for clinical KPI's

Custom-designed IT systems were the most popular mechanism (65%, n=42 of 65 responses) for the presentation of KPI data, followed by 'standard databases' and 'balanced scorecards' (Figure 5.8). Twenty-one per cent (n=14) of these respondents

identified the use of an 'other' system, including electronic systems, clinical or board reports and ward entrance boards.

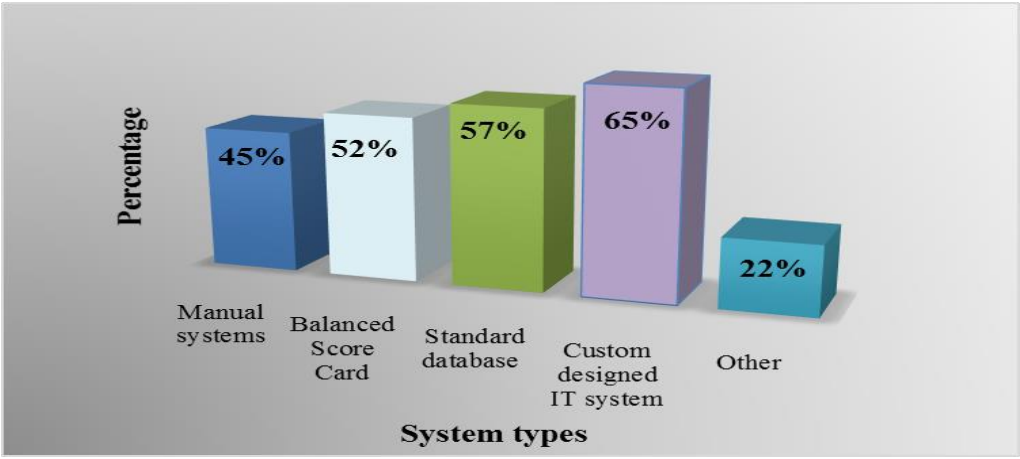


Figure 5.8 Systems use in KPI management

5.4.4 Reporting of KPI data within organisations

Seventy-five per cent (n=42) of 56 respondents to this question stated that KPI data were reported across multiple levels within their organisations and externally. These levels could be broadly classified as: clinical, management, executive and national (Table 5.8).

Table 5.8 Levels at which KPI data are reported

Clinical level	Management level	Executive level	National level
• Ward/unit/ team • Clinical/ nursing staff • Frontline staff • Ward Sisters meeting	• Managerial staff • Directorates/Divisional /Service/Department • Professional nursing meetings • Committees (general - quality and safety/ governance/ leadership / assurance, and specific – infection prevention and control) both nursing and others e.g. pharmacy • Senior nurse management meetings • Health groups (not specified)	• Trust/ Hospital Board • Nursing executive • Executive management • Strategic nursing meetings e.g safeguarding • Board of guardians and directors • Patient and public partner	• NHS/ National Boards • Commissioning groups • Public reporting • Websites • National groups

Sixty-one per cent (n=34) of respondents, identified reporting structures where clinical nurses and midwives had the opportunity to discuss KPI results. Examples included governance meetings, professional forums, town hall meetings and practice-specific committees, such as those held by infection prevention and control teams. In contrast three responses indicated a top down approach to the reporting of KPI data, where information was "reported to front line staff" [unique identifier - RU16].

5.4.5 Involvement of clinical nurses and midwives in KPI use

Data collection was by far the most frequent way in which clinical nurses and midwives were involved in KPI use, with 50% of respondents (n=28 of 56) reporting this method (Figure 5.9). Twenty-one per cent (n=12) identified clinical nurses and midwives as being involved in acting on KPI data and only 9% (n=5) were stated to be involved in driving improvement.

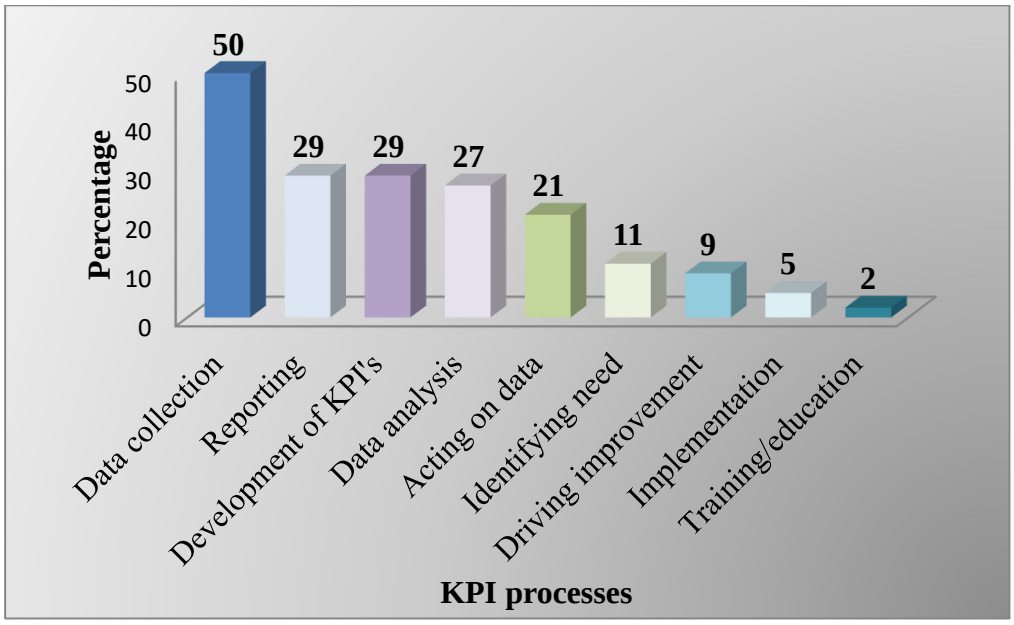


Figure 5.9 KPI processes in which clinical nurses and midwives are involved

Where respondents referred to a KPI process, the involvement of nurses throughout this process was reported by only 4% (n=2): "Completely, from developing, implementing, owning and driving the improvements" [RX1]; "In all aspects – collection and review for improvement" [RV3]. In comparison, 5% (n=3) reported that nurses were not involved

in working with KPI at all. Other respondents indicated that they were indirectly involved as clinical staff in KPI use:

> "The clinical nurses and midwives receive a Ward Quality Report in electronic format. The staff can access this and compare themselves with other wards" [RY5].

5.4.6 Mechanisms to support and encourage action on KPI data

The majority of responses (94%, n=53 of 56) identified various communication strategies as mechanisms to encourage action on KPI data. These included display boards, action plans and organisational groups such as nurse practice committees, divisional quality meetings and a range of specialist teams. In contrast, one respondent identified only "admin and IT resources" as support mechanisms and described these as "inadequate" [RU8], while another simply stated "nil" [RU23]. When the communication strategies were analysed in more depth, some form of practice monitoring was reported by 68% (n=38) of respondents. This took the form of reviews, audits, tracking change and action plans.

Shared learning and comparing performance were reported as ways in which to encourage action on KPI implementation, with statements such as, "visible comparative performance between teams/wards is used to drive improvement in practice" [RY3] and "Directors of Nursing can use (KPI's) to benchmark across similar specialities and hospitals" [RU18]. In addition, 29% (n=16 of 56) of respondents identified some form of challenge or being held to account as a support mechanism. These were captured in responses such as "performance management" [RY10, RY4, RX4], "'Confirm and Challenge' meetings" [RY2], and "presentation of action plans for non-compliance" [RY8].

Twenty per cent (n=11 of 56) stated that practical support measures were available such as additional funding, reconfiguring of services, specialist services, quality improvement staff and practice development staff. A further 11% (n=6) identified some form of staff training to help them understand KPI's. In addition to formal teaching such as "quality assurance programmes" [RY31] and "further education" [RU20], this training included supervision, mentorship and individual guidance. Support mechanisms were identified at three levels:

- **clinical level** – "teams have regular service development meetings at [community mental health] level to review KPI's from a team perspective to try and improve practice" [RU26];
- **management level** – "matron support" [RY6]; and
- **executive level** – "The Director of Nursing chairs the [nursing and midwifery group] and challenges and encourages actions" [RY19].

5.4.7 Examples of when KPI data were used to improve practice

The KPI's reported to have been used to improve practice were identified and grouped under the practice area headings used in the questionnaire design (Figure 5.10). Clinical KPI's were the most common examples provided.

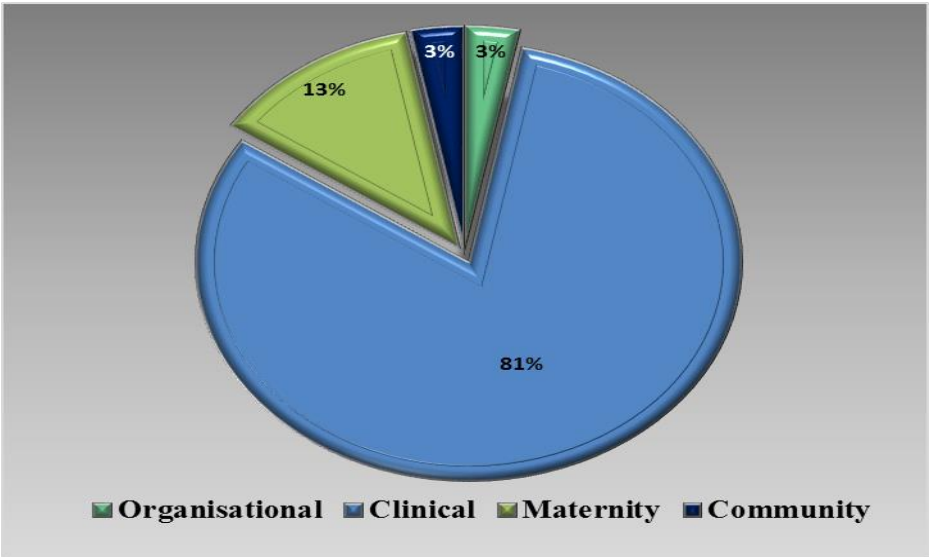


Figure 5.10 Classification of KPI's chosen to illustrate improvement

Analysis also sought to identify any stated improvement actions and the resultant outcomes. A diverse range of actions and/or improvements to practice based on KPI data were reported. A detailed breakdown of the 32 examples specifically related to nursing and midwifery KPI's are presented in Table 5.9. Appendix 19 presents all the examples reported included those not nursing and midwifery specific.

Table 5.9 Nursing and midwifery specific practice improvements resulting from the use of KPI data

Aspect of practice measured and number of examples	Action taken and/or improvement achieved
Number of infections n=5 Time taken to isolate patient n=1	• Reduction in bloodstream MRSA • MRSA reduced through use of the Saving Lives audits • Increase in infections triggers use of root cause analysis (RCA) • Training and education. Extra resources. Equipment. • RCA used to improve dressings and care of peripheral and central lines • Reduction in time to isolate – decreased delays
Number of hospital-acquired pressure ulcers n=10	• Informed use of risk assessments in reporting and management • Implementation of new reporting system and staff training • Implementation of a skin bundle • Implementation of pressure ulcer collaborative • Root cause analysis resulted in Trust wide action plan • Implementation of specific campaign • Escalation process devised • Development of tissue viability team and implementation of '300 days without pressure ulcers' initiative
Number of prescribed medications not administered n=2	• Strengthened training in relation to diabetes • Omitted medications-an action plan/learning programme was put in place leading to a reduction in "blanks" doses
Delay time in recording observations n=1	• Implementation of RCA reduced delay in recording of cardiovascular observations
Number of falls n=6	• Prevention – significant improvement • Reduction due to use of Improvement Methodology • Reduction following introduction of improvement plan and review of compliance • Focused initiatives in identified areas of need • Escalation process devised • Strengthened compliance with assessment and interventions
Compliance with hand hygiene n=1	• Multi-disciplinary taskforce established
Number of delayed notifications of post-natal discharges n=2	• New system of e-reporting of discharge notifications • Late notification of birth – improvement plan between hospital and community led to reduced incidents and targets being met

Table 5.9 Continued

Aspect of practice measured and number of examples	Action taken and/or improvement achieved
Breastfeeding rates n=1	• Appointment of lactation consultant
Number of pregnant women taking folic acid supplements n=1	• Identified reduction led to appointment of a clinical midwife specialist
Completion of child health development checks n=1	• Established as a key priority with additional training and focus on meeting national Standards
Number of temporary staff employed to support 1:1 patient care n=1	• Analysis and costing led to creation of a dedicated team of nursing assistants. This has improved care and cost efficiency.

Further analysis involved reviewing the examples given in Table 5.9 in more depth to identify not only *what* had been done but also *in what way* the improvements or actions, described as resulting from KPI data, had been achieved. Seventy-seven per cent (n=37 of 48 respondents) identified ways in which outcomes had been achieved. These could be categorised under the headings of:

- **Education** (including awareness days, storytelling, formal training, presentations and briefings, campaigns, development of guidance)
- **Change of practice** (including change in care delivery, implementation of escalation processes/ standard operating procedures/ improvement plans/ audits)
- **Reviews of practice** (including root cause analysis and incidents) and policies.
- **Promotion of team working** (at all levels of nursing and midwifery and across services, with other members of the multi-disciplinary team, through development of local champions)
- **Extra resources** (development of new teams/services, provision of equipment, IT investment).

5.4.8 KPI's most valuable for determining the quality of care

Eighty-five per cent (n=39, of 46 respondents) identified at least one KPI which they believed was valuable to determining care. However, 22% (n=10) highlighted that they

could not, or found it difficult to, select just one KPI. Five of these respondents (n=10) stated that more than one source of information was needed to provide the "triangulation of information across clinical and workforce indicators that gives the richness of data necessary" [RV1]; "to make it credible and place it in context" [RY4]. Another respondent suggested that "triangulating patient/user feedback with a range of indicators would be a powerful proxy indicator for quality, safety and efficiency" [RY3]. Figure 5.11 demonstrates the range of KPI's identified, with those relevant to pressure ulcer care being considered the most valuable for determining the overall quality of nursing and midwifery care by 26% (n=12) of the 46 respondents.

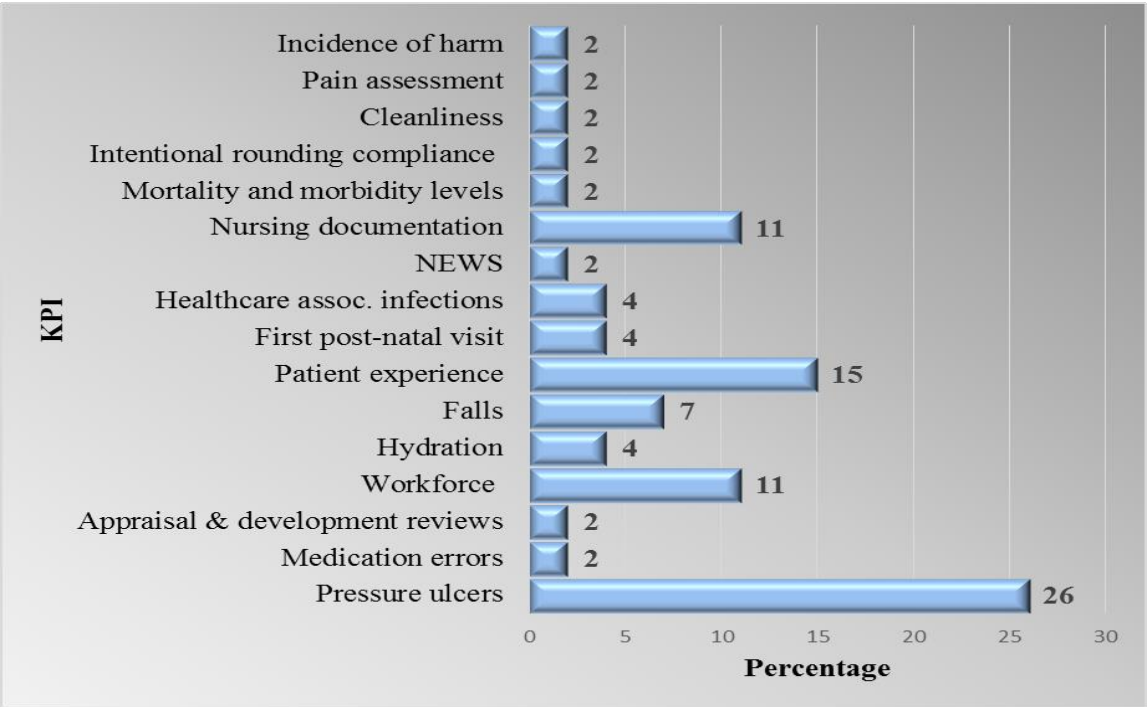


Figure 5.11 KPI's stated to be of value in determining the quality of care

5.5 SYNOPSIS OF FINDINGS REQUIRING FURTHER EXPLORATION

While the organisational overview provided by directors of nursing created a base of knowledge about KPI use, there was a need to explore how this information translated into the reality of practice at clinical and managerial level. Furthermore, analysis of the data gained from the questionnaire highlighted points of interest which required further exploration in phase two of this study:

- Findings suggested that a wide range of data were being collected across the five regions, yet few could be confirmed as KPI's.
- Over half of the data items listed by directors of nursing were not clearly recognisable as being specific to nursing or midwifery.
- Nationally mandated requirements were the main reason given for KPI selection, while few respondents specified that KPI selection involved clinical staff.
- Data on the frequently cited KPI's were collected by more than one group of staff in some organisations. Clinical staff were identified as the main collectors of clinical KPI data, but which clinical staff is not known.
- Responses derived from the open text boxes suggested that few organisations prepared their clinical staff for KPI use or provided access to formal quality improvement support.
- The number of respondents indicating the involvement of clinical staff throughout the KPI process, including action on KPI data, was low. Despite this, the examples provided of KPI's that were deemed to be of value in determining quality of care, and those reported to have improved practice, were mainly those which involved measurement of clinical practice.
- Insight was gained into the processes used in the collection, analysis and reporting of KPI data, with custom-designed IT systems being the most commonly reported means of data management. However, the impact these had on practice was not identified.
- A number of respondents indicated the use of an 'other' for data analysis but who or what this might be was not explained.
- Although a large number of data items were listed as patient experience KPI's, this was much reduced following analysis.
- A high number of maternity data items were reported in comparison to nursing, although many where subsequently identified not to be midwifery specific.
- Only a small number of KPI's were identified for the community sector despite sixty-two per cent of the respondent organisations providing this service.
- A variety of different data reporting methods were identified, some of which were stated to encourage shared learning and competition.

5.6 SUMMARY

This chapter has presented the findings from the first phase of the study as reported by the DoNs. The participants represented a diverse range of healthcare organisations, serving both large and small populations, and providing an almost equal balance of acute and community services. Examples of KPI selection, data gathering and implementation in all four fields of nursing, midwifery and community practice have been included. These findings provide insight into KPI operational processes from the DoNs perspectives though this is limited. Also, analysis of the quantitative data based on comparison between the participant regions has revealed that the regions use similar processes in relation to: KPI data collection, frequency of collection, staff who collect the data, data reporting methods and the systems used to present the data.

Objective one of the research study, being to scope the range of KPI's used in nursing and midwifery across the UK and ROI has been achieved. Progress was made towards identifying KPI processes, and potential barriers and enablers to KPI use were identified. To further enhance understanding of the organisational dynamics which influence KPI use required the perspectives of nurses and midwives working at senior management and clinical levels. The findings discussed in this chapter contributed to the design of the interview guides that directed a more in-depth exploration of the factors influencing KPI choice, application and implementation. The resultant findings of phase two are discussed in detail in the following chapter.

Chapter Six: Phase Two Findings

This chapter presents the data from phase two and outlines how participants described their work with KPI's. Although interview responses were gathered from meso and micro levels of nursing and midwifery it was noted, as analysis progressed, that there were many commonalities within their responses. Therefore, their responses will be woven together to articulate the perspectives of each level as appropriate. Two themes and six sub-themes emerged: firstly 'The Leadership Challenge' which included the sub-themes: (i) Voiceless in the national conversation, (ii) Aligning KPI's within the practice context and (iii) Listening to those who matter; and secondly 'Taking Action' which included the sub-themes: (i) Establishing ownership and engaging staff, (ii) Checks and balances and (iii) Closing the loop.

6.1 PARTICIPANT PROFILE

Of the 77 questionnaire respondents, 39 (51%) directors of nursing expressed interest in their organisation participating in the interviews and provided details for follow-up contact. Following application of the selection criteria (section 4.4.2), the total number of organisations that participated in this phase of the study was eight. A total of thirty-five semi-structured interviews took place either face-to-face (n=33) or via the telephone (n=2). Interviews lasted between thirty-five and eighty-five minutes. Participants included directors of nursing (n=7), senior managers (n=8) and clinical managers (n=20). The length of time participants had worked in their current posts ranged from four months to eighteen years. For those who were registered nurses and midwives, the length of time registered ranged from two years to thirty-six years, with the mean being twenty-two years. One senior manager was not a nurse or midwife. Nine participants were midwives working at either senior manager or clinical level, and six participants were nurses or midwives working in the community setting.

6.2 THE LEADERSHIP CHALLENGE

Analysis of data suggested that a connection existed between the effective use of KPI's and leadership at all levels in healthcare, from those setting strategic KPI direction at national level through to nurses and midwives working in clinical practice. Where KPI's

were used effectively to improve practice there was evidence of either personal or managerial leadership. However, numerous challenges were also identified, both internal and external to practice that prevented or threatened effective KPI use:

> "In some environments, they're really confident, complex conversations around the priorities and how do we make those improvements. In some areas it's a case of we need you to tick all the boxes. It's incredibly variable depending on… the leadership" [SM4][5].

This theme illustrates the national and organisational use of KPI's within three sub-themes that reflect the challenges and need for leadership at all levels if KPI's are to be effective in healthcare.

6.2.1 Voiceless in the national conversation

Participants responses illuminated how powerless they felt in terms of participating in a national conversation about what was useful to measure and the choice of appropriate KPI's. Despite all DoNs agreeing that KPI's are "a very useful tool for driving up improvements" [DoN8], the nationally mandated KPI's, which all organisations were required to comply with, raised various challenges. While the intention of the national bodies was generally believed to be "noble" [DoN5] and the KPI's "there for a reason" [DoN8], senior nurses and midwives reported these KPI's did not necessarily evidence their work and they felt powerless to influence this agenda:

> "Some of the national ones are mandated, you have to do it... the local ones with the commissioners are more open to negotiation" [SM6].

This powerlessness translated as a sense of frustration that their concerns were not being listened to and heard. DoNs stated that despite raising the lack of feedback on submitted KPI data with several external bodies, they either received no response, or a response which resulted in more frustration. DoNs called into question the authenticity of some KPI's and identified the collection of KPI data solely for statistical purposes, with unnecessary duplication of data and impact on cost. The relevance of some national but non-mandated KPI's was also called into question, causing frustration with leadership at board level: "it turned out we've had [the KPI's] written into our contract… but it has no value" [SM8]:

[5]Directors of Nursing: [DoN]; Senior managers [SM]; Clinicians are [CA] if the nurse worked in the acute sector, [CM] midwives, [CC] community nurses.

> "We are accountable to three [councils]… All of them want different information at different times and they call them KPI's. We submit a huge amount of data each quarter… the work that that creates is an industry… And if we were to cost that across the NHS it'd be staggering. Some of this is nationally driven in terms of understanding demographics, the cause of trends… I'm pushing back to say, 'okay, I'm giving you all of this data… we're being asked to...achieve x, y and z... How does that translate to improvements?' Quite often the people that we submit it to can't answer that question either" [DoN8].

Conversely, in another region there was reported to be more collaboration in national KPI use, and a sense of being listened to:

> "The people who chose the [KPI's] are the people from the [organisations], and although the CNO chairs the group, all the [organisations] have a contribution to make and participate in that meeting" [SM2].

At director level there was a perception that some of the national KPI's which they were mandated to use were not measuring what mattered. Waiting time targets in emergency departments were regarded as "a proxy of care" [DoN2], in that patients should be seen quickly, but individual's circumstances also needed to be considered. While DoNs understood the rationale for KPI's that could evidence effectiveness in terms of value to service users and the healthcare system, some held mixed feelings about KPI's developed to improve efficiency, believing they did not always measure the right thing at the right time and place:

> "There's probably 20 questions that you have to ask so it's not a triage anymore… arguably if we don't do it, we've not met a KPI… If we've got [patients] that are… critically ill, how important is… the public health message... I often question is this the right place and the right time to be meaningful and add value?" [DoN8].

Additionally, DoNs reported failure at national level to consult on the use of some KPI's described as politically motivated, with concerns stated about their evidence-base:

> "It was a politician attempting to reduce the amount of time it takes to get to an operation. However, it was a material shift, it brought the waiting time… down to weeks instead of years. But there was no evidence behind that, it was an assertion… why wasn't it reduced further? …zero tolerance against MRSA and C. Diff - absolutely is a different category of indicator" [DoN5].

Being unable to achieve KPI compliance due to circumstances over which they had no control resulted in dissatisfaction for all levels of nursing and midwifery. Powerlessness at board level to influence national KPI use was noted, with resultant impact on clinicians who had to use KPI's that were irrelevant for practice improvement:

> "What are we measuring this for if we can't do anything about it?... It comes up at those monthly performance meetings with the [Board]. So, they do know, but they can't influence the system either" [DoN1];

> "Sometimes… [the KPI] doesn't fit women having babies… it's a young, healthy population... We've been open for five years and the birth centre has never had a case of C. Diff… We fill out slips, trips and falls but they're not really relevant" [CM4].

A perceived lack of communication, collaboration and leadership at national level resulted in failure to provide opportunities for discussion and negotiation between regional bodies and organisations. Consequently, participants considered that organisations were 'set up to fail', with all levels of nurses and midwives raising concerns about the negative impact on financial income: "if we don't generate, or we lose money because we don't reach a KPI, then we're not going to be here" [CC8]:

> "Commissioners say, 'reduce outpatient activity by the end of the financial year', which is ludicrous. [The innovation] is based on a 12-month reduction. If we agree in April we have a process of planning and we implement in quarter two… You're not going to see the reduction [until quarter two of the following year]. The negotiation back is, 'we can't... We can demonstrate a reduction in bookings'. They say, 'No'" [DoN5].

The lack of discussion also resulted in nurses and midwives experiencing frustration when mandated KPI's competed with organisational KPI's for limited resources. For example, when the implementation of KPI's required staff resources; nurses and midwives had to decide was it more important to try and meet a mandated KPI in one service or an organisational KPI in another area of practice. This need to meet national KPI's for financial benefit was of concern in most organisations. Furthermore, it was reported that sometimes the financial imperative was what drove improvement, leading to issues with sustaining practice especially if a KPI was not seen as relevant:

> "The harsh reality sometimes is as soon as that target and that money goes, people resort back to old practice. That's the challenge… how do you keep that going because often it's been the money and that focus that's related to the improvement" [DoN4].

Moreover, failure to include clinicians and patients in the development of national KPI's was apparent in reports that patient choice was not taken into consideration. This resulted in perceived unfairness and conflict between meeting patient choice or meeting KPI's for organisational financial gain: "we might be penalised for something that could be

mother's choice. ...even if they're steeped in evidence-base" [DoN5]. For example, with premature babies:

> "The mum pumps away… provides them with [breast] milk. Ten weeks down the line she's struggling. It gets to that last 24 hours… they really want to get home so they say, 'I'm going to use a bottle now'. [The KPI's based] ... on the last feed before they go home. Ten weeks of really fantastic work and then you wouldn't get the money" [SM8].

At both national and organisational level, there was a need for those in senior leadership positions to listen to the "people on the floor… they'll know what's gonna make a difference" [CA1]. This was stated to be essential as "increasingly, senior management have no clinical credibility" [CM4]. Collaboration on KPI use that was inclusive of all levels of nursing and midwifery was a prerequisite to ensuring that the reality of practice was not overlooked:

> "Externally mandated ones… I don't think they have enough people involved from the ground floor when they're devising the KPI's... With all due respect to the assistant directors they're not operational. When was the last time they did a medicine round?" [SM3].

The reality for some nurses and midwives was that decision-making took a top-down approach: "usually it's [in] the consultants meeting that decisions are finally made" [CM7]. There was also a belief that commissioners and board members did not always understand how nursing systems work or appreciate the impact that one KPI may have on another. Inclusive KPI decision-making would help ensure that "if you are hitting or achieving one standard or measure… you're not being detrimental to other processes of care" [SM4]. Due to national leaders failing to provide clear KPI definition and guidance on their use, or following KPI use to provide timely feedback, other participants considered they were hindered in their ability to move forward with improvements:

> "The [KPI] 'care hours per patient day' is a new one and we haven't had any guidance about what we're trying to achieve on that one yet. Although we're collecting [and submitting] data every month… I'm thinking, 'what is the care hour?'" [SM6];

> "You may submit your data and then the result comes out six months later… It makes it very difficult for you to change practice or implement improvements" [CA8].

The need for leadership at national and organisational level to make key decisions to reduce this workload was raised by most participants due to the potential for "reducing the amount of time we have to give care" [CC4].

Using the audit process as a means of measurement for KPI's seemed to be the most common tactic employed. However, this placed demands on nurses and midwives through the effort involved. Some organisations were reportedly in the process of identifying how heavy their audit commitment was with one organisation employing "over 500 audits" [DoN4]. This also led to confusion as to whether "you're auditing or whether this is a performance indicator that we need to be measuring ourselves against" [DoN1]:

> "People are spending inordinate amounts of time writing the biggest load of rubbish. And then other poor people are spending inordinate amounts of time auditing the biggest load of rubbish" [DoN3].

For this reason, half of the participant organisations had taken steps to stop or reduce data collection. However, there appeared to be a lack of strategic consensus or direction at national level to act on reducing those KPI's that were mandated, except in one region were agreement to reduce the frequency of data collection for a national KPI was reported:

> "We've said, 'you can't cull the ones that we need to formally report on [but] cull the ones that you think we never use or we could do every second month, or every six months'" [DoN4];

> "[Chief Nursing Officer] is happy that the 'tick box' part of the skin [care] bundle is not completed every month... Practice is showing that it's well embedded and that the care is being given" [SM3].

Being held to account by the regulators was a key consideration when it came to making a decision about stopping or reducing KPI use. Reluctance to address this was demonstrated by participants at all levels, despite concerns being expressed about the growing number of KPI's and resultant pressure on clinical nurses and midwives and potential detriment to patient care:

> "Everyone wants their own KPI's, but for a nurse on the frontline they all become completely accumulative and unmanageable and it's sometimes unclear why they're doing it" [SM4];

> "It is frustrating if we are short staffed and I'm having to take somebody off that I could do with on the floor" [CA2].

The fear of being held to account appeared to increase the reliance on KPI's as a means of providing assurance, resulting in their use to improve practice where no problems existed. The failure of people in positions of leadership to address this resulted in

frustration, especially for those who were aware that it is "false reassurance, that because you're monitoring everything that it will deliver what you need" [DoN6]:

> "[A specific KPI] We've never had a single issue... I would have had line managers in the past… that would say 'you're absolutely right: we'll fight that corner; we're not doing it'. But I now have a line manager who would say 'just do it and then it's done' [CM4].

6.2.2 Aligning KPI's within the practice context

The need for a balance of KPI's to supplement those nationally mandated was highlighted. Various considerations were identified when deciding which nurse-specific KPI's an organisation should select for use, such as: "we've added some [KPI's] that we think give a broader view of a system" [DoN4]. There was a commonly expressed view that a range of KPI's were needed to be able to triangulate KPI data and thus "see the totality of a patient's journey" [DoN3]. For example, in the ED:

> "Unless you're also measuring the patient experience, you could have been very efficient in hitting the target about getting them in and out of the department, but they could have had a dreadful experience" [DoN3].

Sources of information which influenced KPI selection for monitoring or improvement included: "important indicators from the literature" [DoN1], as well as the use of benchmarking with other organisations and "international institutions" [DoN1]. Additionally, it was reported that "each year we chose three areas of deep focus" [DoN6], which was an aspiration expressed by others.

Participants expressed concern that executive boards sometimes rescinded their responsibilities despite the authority granted to them. This related to a perceived failure to address internal disagreements on the use of certain national KPI's, with reports of some "very senior nurses and doctors becoming complacent" [DoN8] about KPI data. The lack of leadership at board level in addressing issues was viewed as adversely affecting the drive to improve practice. For some, complacency was no excuse: "you can't always measure things on a like for like basis but that's no reason not to strive to" [DoN4]:

> "Caesarean section... the national average is about 25 per cent... I would like to use that as a benchmark for improving our services, but there is no impetus to do that. They… say, 'we're not a standard unit, we're a tertiary centre'… When it's creeping up to 30 per cent I'm getting anxious… The doctors don't put as much

> emphasis on them. The Board of Directors and the executives don't take a stand" [SM8].

Another challenge was failure, as a multi-disciplinary team, to take responsibility for, and address problems relating to, the use of KPI's. Despite DoNs reporting that medical and nursing directors worked together as lead professionals to influence practice, there was evidence that the use of KPI's was not always a team effort. There were reports of clinical managers needing the backing of senior management, such as when consultants threatened hand hygiene compliance: "no, there's nowhere for me to hang me jacket" [CA1]. While other participants reported that responsibility for the management and improvement of non-nurse specific KPI's was incumbent upon nurses:

> "It's a leadership conversation… many of the KPI's… they're [not] uni-professional and sometimes nurses are held to account for things that are not in their gift. Antimicrobial prescribing... that's a difficult conversation to have with the [medic], saying, 'you've just prescribed this and our policy is…' and is that really… fair?" [SM4];

> "It can feel that a lot of this is left to nursing, whether it's nurses' responsibility or not… VTE… a big element of it is medical, but if it's not going as well as it might be it's down to nursing to sort. That's just about working our way through that" [DoN3].

The selection of KPI's was influenced by the view that KPI's are valued where they "relate back to the frontline. [They] are the ones that… matter and help us to improve" [DoN1]. The most beneficial KPI's were those that were reported to be clinically meaningful, "those which affect patients, staff as well" [CC7]. The desire for KPI's to be clinically meaningful resulted in a few organisations encouraging their clinicians to develop KPI's relevant to their own practice:

> "Part of that [organisational] approach is about staff working at the frontline saying, 'what does 'good' look like for our service?' We will work with people to get bespoke KPI's" [DoN3].

In some organisations groups were reported to contribute to organisational KPI selection, but this predominantly involved senior nurses and midwives representing and negotiating on behalf of clinicians in their service areas:

> "We've a… governance forum which I chair. A senior nurse... from each of the directorates sits on that, and their job is to get a consensus within their areas so that we would have some discussion and agreement about [KPI selection]" [DoN2].

Conversely, some reported organisational disinterest in KPI's that were considered by clinicians to be useful and, as with the national KPI's, there was often a lack of consideration given to how some KPI's aligned within the practice context. Where the KPI's did not align with practice need, they were tolerated by clinicians but were not the focus of improvement:

> "You tick the boxes on the ones that aren't [relevant]… and everyone gets off your back. Then you do the ones that are… the most meaningful" [CM4].

When scoping the KPI's used by organisations in phase one, there were two areas of interest that emerged warranting further exploration the first of which was the large number of midwifery KPI's. Several explanations emerged in the course of seeking to understand why so many maternity KPI's had been identified and how these could all be actively used to improve practice. The reasons given were that maternity had the "highest amount of litigation" [DoN3] and that midwives acted as "independent practitioners… they have a lot of authority over a very risky life event" [DoN5]. Thus there was a belief that:

> "The hospital has produced a very negative, very risk averse, very scary place for midwives to work… and KPI's have become a comfort blanket without a real understanding of whether they are leading to an improvement" [SM4].

There was also a view that, until recently, midwifery regulation has been centralised far from practice and therefore has been difficult to scrutinise, causing a drive for assurance which KPI's were perceived to provide. The large number of maternity KPI's was also linked to the notion that data collection in maternity services had become very streamlined, as a result of which, "obstetrics is something that you can audit quite easily" [CM2]. Often this data was described as statistical and had more to do with monitoring performance than improvement:

> "The further away you are from the operations, big data is what you need to help with the scrutiny of quality and safety of a service" [DoN5];

> "I asked if they had any statistics from [a recent national investigation]. They had no statistics, so they had nothing to monitor their activity" [CM3].

The second area of interest that emerged from phase one was the use of only a few KPI's in the community setting. Most DoNs stated that, to date, KPI use has been focused on the acute sector, possibly because:

> "Significant areas of concern have been flagged up, say in the media or in nursing literature or [from] serious adverse incidents" [DoN2].

The most frequently reported reason for there being so few KPI's specifically designed to measure community activity was lack of role clarity. Despite one region engaging community nurses in KPI selection for their own practice, choosing relevant KPI's was described as, "more challenging, there is no doubt about it" [DoN2], with nurses themselves "struggling to identify KPI's" [SM2] that aligned to their practice:

> "We are involved in so many different areas that criss-cross with GPs, social services and other teams. Plus, the complex issues that we deal with... It will be informal… there's no set pattern to what we do" [CC7].

Contrarily, in other regions district nurses reported a lack of clinical engagement in KPI selection. This resulted in district nurses in different regions reporting inappropriate use of the same KPI. Autocratic leadership styles come through in the statements that they were "told we must get a base-line weight even if somebody [just needs] a one-off injection" [CC3]. The KPI guidance also detracted from experiential knowledge:

> "We were told to do nutritional assessments on every patient whether they were a young person who walks in or patients in the last few days of life. The one form-filling exercise and assessment was meant to cover the whole spectrum... It can take away personal knowledge and experience because you're being guided down a certain road" [CC7].

However, some success was identified with KPI's related to completion of MUST assessments, pressure ulcer reduction and patient experience: "collecting patient stories - looking at district nurses" [DoN2], as well as the development of a community-specific KPI which had subsequently been adopted for national use:

> "In the commissioning plan there is now a target in relation to carers' assessments, which would not have been there before" [DoN3].

Another challenge that impacted on the introduction of KPI's for use in the community was the incidence of unreliable data. Reasons given were issues of patient access; failure to complete documentation by either the support workers or the patient (in the absence of the nurse); and the support workers or patients not conforming to the KPI guidance, thus resulting in unreliable data:

> "We have patients or clients in the community where the nurses don't visit very often. It may be care staff, and the care staff have a very high turnover. There's also a lot of issues with working in somebody's house… they're not under any obligation to use your equipment or take your advice" [CC3].

6.2.3 Listening to those who matter

Organisations captured the service users' experience and considered recommendations for practice in various ways. Nevertheless, specific concerns were raised about listening effectively to service users and understanding how to manage patient experience data. Most participants identified the need for measurement that captures the experience of patient care to complement the numeric data and, whilst not in themselves KPI's, surveys were the predominant method used for this. However, there was also a belief that patient experience was regarded as less important by some professionals:

> "…patient stories, patient experience alongside the KPI's cos the KPI's can be crude measures around sickness, absence or spend. They're one dimension… So, measuring 'good' for me is both quantitative and qualitative" [DoN4];

> "We could raise the profile of patient feedback. At Board meetings they have a patient's story but I'm not 100 per cent certain that it's there with the finance figures… on a par" [SM7].

Perspectives about the capacity of KPI's to capture the patient experience of care varied. For those unused to collecting patient experience data this was viewed as almost impossible. Other participants reported the regional use of KPI's to collect data on the more psychosocial aspects of care such as, "is your nurse's attitude acceptable?" [CA2] and "all the nurses had a good understanding of the care I needed" [DoN2]:

> "I think KPI's can only capture… certain activities that nurses undertake, generally tasks. They won't capture the patient piece necessarily. It's like they won't capture the nursing art, they capture the science" [SM1].

Additionally, participants confirmed that, apart from the national survey, they did not collect patient experience data although they all agreed that, "there would be a benefit… absolutely" [SM1]. The reason given for this suggested there was a lack of collaborative accountability and working between professional teams:

> "We can't audit medical staff... I don't know how many times I've designed one and either it hasn't been allowed [pause]. If the answer is negative… [about another] discipline… how do you action that as a nurse?" [SM1].

Although most participants viewed surveys favourably in terms of evidencing good care, a few viewed them as being less informative: "the generic comments at the end maybe 'had a good experience', something that you wouldn't get a lot more data out of" [CA8].

Difficulties were also noted in obtaining useful information from service users with limited ability to communicate or a strong desire to remain anonymous:

> "[Our] service is quite delicate; people are not happy to say they have been with us" [CC2];

> "…because of cognitive issues or they can't hold a pen or they're blind. So, ironically, it ends up they almost have to ask us to fill it in for them, and that probably invalidates the results" [CC4].

Furthermore, with the increase in electronic data collection systems, computer literacy was a problem, although some organisations had taken steps to help address this through the appointment of a "patient experience manager" [CA3] or teams.

Another challenge was obtaining honest feedback that would be beneficial in identifying areas for improvement. Participants reported that patients felt nurses and midwives would not want the truth unless it was favourable, or that there was "fear that if they… said something bad… it may affect the care they get" [CA2]. Where one-to-one care was delivered it was also reported that:

> "We have given them out before but it's almost like a personal thing, they don't want to get their nurse into trouble. You don't get the best information back" [CC3].

Despite the reluctance of service users to provide critical feedback, clinicians appeared to desire information which they could use for improvement: "if I'm not doing something okay, tell me, so that I can make a difference for you" [CM6]. The main method suggested to achieve greater honesty was to have data collected by some-one not directly involved in caring for the patient: "if it's somebody outside of the ward who's doing [the collecting]" [CA2] such as, "volunteers that give patients the… survey" [CA6]:

> "If somebody's had a bad experience, sometimes it's just their channel, instead of making a complaint, to give a lot of negative feedback. But we need that too" [CA3].

Most clinicians also expressed a preference for real-time feedback, thus allowing them an opportunity for immediate action. The benefit of electronic systems to support this was reported and compared to the time delay for national surveys:

> "We could have a patient with us for six to eight weeks on IV antibiotics, I would give it out in the middle of their stay to see if we could improve it for them" [CA2];

> "[Locally] it's computerised, that comes straight to us as individual ward managers… The [national survey] we get back quarterly" [CA6], or "it'll take about a year for the results to come" [SM8].

Although a few clinicians reported collecting and analysing their own patient feedback, most stated that the information was collated centrally and sent back to them. However, there appeared to be a lack of collective agreement and communication in relation to follow-through, as it was not always clear how this feedback was then utilised by nurses and midwives: "whether they're interpreted appropriately and whether we use that to change services or not is a different matter" [SM8]:

> "We get patient satisfaction surveys back in pie charts and blocks. They are displayed. Every month she [displays] how we've done or what comments were said. I know because I'm a [junior manager], I'm not sure whether all the [staff nurses] know it's there" [CA7].

Where mechanisms were in place to provide feedback, concerns were raised about the lack of detail provided and thus the impact this had on ability to act: "it's anonymous so you can't ask for more detail" [CA8], as well as not having a means to explain why patient wishes may not be met. This may have been because of a potential negative impact on other patients:

> "I don't want to collect data from parents and they arrive in a month later and I haven't [been able to do anything] … Parents are gonna be more dissatisfied than satisfied after going through the effort of filling it out" [CA1].

Most organisations used additional methods to collect patient data as a means of compensating for the limitations of regional surveys, such as minimal distribution: "[It] only touches about 2000 people a month, we see 2500 patients in our outpatients alone in one day" [DoN6]. These methods included the collection of patient experience data "through [patient stories]" [CM3], which were reported to be used to good effect in half of the organisations: "…surveys, probably not so good. The patients and their relatives' [stories], brilliant" [CA6]. One reason given for the possible reluctance to use this method more widely was reported to be because, although believed to be more meaningful, it was more time consuming. A slightly different method of collecting patient stories was also reported though it was not yet known if this would reduce burden:

> "We're doing early testing... simple questions about their day... One patient… was distraught and upset [a fellow patient had died] … He didn't want to speak but he was happy to write how it affected him. We're looking at using diaries to say: 'how can we improve services? Or 'this is how we're doing'" [SM7].

Various informal sources for patient experience data included: “comfort rounds, matron rounds” [DoN8]: “[executive walkabouts] when we… check back with the patients” [DoN1]; and “our council of governors… send us emails about what people are saying… and advocacy [services]” [DoN5]. Furthermore, as well as a patient experience app which some organisations were exploring, social media was becoming a source of information on patients’ experiences:

> “The old traditional thing of filling out a comments card, less and less, but frequently we would see postings on Facebook, on Twitter and our [communications] department monitor that” [DoN3].

Another method of listening to the patient or family was through the narrative provided in complaints and incidents. Although the ‘number of complaints’ and ‘number of adverse incidents’ are high-level numeric KPI’s, the complaints and incident reports themselves appeared to act as proxy indicators for experience. Complaints were the main source of information where surveys were not available. When asked which KPI was of most value:

> “Honestly? Complaints. If somebody tells me something in a complaint, usually the passion that comes through or the distress that comes through with it I find quite upsetting and distressing” [SM8].

Listening to those who matter was evident in the efforts made by leaders to engage service users on various committees: “when we’re developing organisational service strategies” [DoN4] or to provide “feedback on design of a KPI system for their information” [DoN6]. It was also reported that “patient/client experience work” [DoN2] was being used to inform the use of KPI’s. Additionally, opportunities existed for staff to contribute to “designing their own questionnaires or their own methods of gathering patient experience” [SM2]. Furthermore, when the KPI was nurse-specific, clinicians demonstrated leadership qualities, showed empathy and acted as advocates for their staff or patients to over-ride the imperative of meeting the KPI target, even though “there’s this perception that you can’t be seen to be failing” [CC2]. For example:

> “If you start talking about care bundles while they’re running ragged out there… the respect is lost… so we postponed it” [CA1];

> “[The KPI] ‘cannot attend’… two cancellations and one DNA and you’re off… Somebody… with dementia… staff make the decision whether we send for them again or not... No KPI target can do the individual patient assessment… if we breach the target, we breach the target... my contract says that I act in the best interest of the patient” [CC2].

6.3 TAKING ACTION

The findings presented here focus on those elements of practice that enabled nurses and midwives to act, or not, on their KPI data. Participants described how, if KPI's were meaningful to their practice and patients, they would be more likely to own and engage in their use and act on data. The sub-theme of "Checks and Balances" unearths how action taken can increase confidence in data collection and reporting because, although KPI's were viewed as objective in nature, challenges where identified in ensuring reliability. 'Closing the loop' was a term used by participants to illustrate the full cycle of KPI use from their development through to the identification of practice improvement. Here the focus is on action that has resulted in improvement to practice and how this has been achieved.

6.3.1 Establishing ownership and engaging staff

The ownership of KPI's by nurses and midwives, and their engagement in KPI use, dominated discussion by the clinical managers. It was suggested that achieving understanding and the resulting increased motivation would lead to greater compliance with KPI's, and thus improved practice:

> "Engaging all levels more… not just your [junior managers] and above, but your healthcare assistants as well… If people understand why, it motivates them more and it gives them a purpose" [CA8].

Participants highlighted that the level of understanding of KPI's varied and that comprehending what a KPI was and was not, presented them with difficulties. This was especially so for clinicians as they required a skill set that frontline nurses were not trained in:

> "I find a bell curve distribution in my organisation of people who really get KPI's - use them pro-actively, get stuck into the wards, get people ingrained in understanding them. A good group in the middle who get most of them, use them intuitively to support improvements in their parts of the organisation, and there are some people who just don't understand KPI's full stop" [DoN6].

Thus, most clinicians, when asked to suggest how they would improve KPI use, reported a need for greater understanding of what exactly they were being asked to do. Suggestions as to how this could be achieved were either through training or by involvement in KPI

use to support the link between the indicators and quality of care: “that they’re for the benefit of patient care and staff, and not… something that’s scary” [CC2]. The integration of KPI language into daily practice was reported as helpful for some participants. This was achieved in the acute sector through short, daily ‘safety briefs’:

> “We talk about [KPI’s] within the floor meeting and it's good to say the patient or the relatives’ comments, cos it makes it real. It's not us telling, it's us sharing, which makes a difference” [CA6].

Taking action on KPI findings was stated to be the responsibility of the clinical managers, who were held accountable for their own KPI’s. However, clinicians felt distanced from ‘owning’ their KPI’s when they perceived they had little involvement in organisational negotiation and decision-making about KPI selection. For example, the desire for organisational comparison across practice areas resulted in the selection and implementation of KPI’s, which some clinical managers viewed as no longer relevant for improvement in their practice areas:

> “Let me tell you, you’re under scrutiny. If… this is your ward, you have to be pretty sure that you’re delivering a high standard of care, and if there’s things that are not being done well you have to make sure that you’re on top of it” [DoN2];

> “We've lots of specialty wards, and just because they're maternity doesn't mean… their patients [couldn’t] still come to harm... It's rare that they drop below 100 per cent… They did ask, ‘can we stop doing...?’ We said, ‘no, because your patients are still at risk of falling, of pressure ulcers.’ Paediatrics ask [the same thing]... But it's important to have a perspective of all of our wards” [SM6].

The idea of increasing the engagement of nurses and midwives through the collection of KPI data was commonly agreed. Furthermore, in this phase it was argued that:

> “Some people feel: ‘that’s terrible wasting nurses’ time’… But it’s about their ward, I feel they need to have that level of ownership” [DoN3].

Equally, in an organisation with electronic systems for collecting the data, the only audits that nurses and midwives could be involved in were a few observational audits. Here it was reported that, “because the IT team gather the data, we probably don't involve people as much as we [should]” [CM6]. However, the “time-consuming” [CA2] aspect of data collection was of concern. For this reason and because “it’s just quicker to do it yourself” [CA4], some clinical managers reported that data collection was carried out by themselves, reducing greater nursing and midwifery involvement. It was suggested that the issue of KPI workload might be resolved by employing efficient electronic systems:

most participant organisations used both electronic and paper-based data collection methods.

The challenge of sustaining interest in KPI's was reported by all levels of participants, with it being noted that when people are doing the same thing continually, "it stops meaning much… You need to refresh it" [DoN3]. This along with a focus on KPI targets was also reported to cause people to forget the overarching purpose of improving practice. Methods to ensure sustainability included involving clinicians in the introduction of KPI's and the related development of their practice:

> "You need something to work towards but you can't lose sight of what it's about. And maybe sometimes we do, a little bit" [SM6];
>
> "The more that we can generate this kind of activity from the bottom up rather than top down, the more likelihood there is of ownership and sustainability round it" [DoN3].

In addition to the need to involve all levels of staff in the local development of KPI's, discussed in the previous theme, other methods of sustaining interest in KPI's were offered. These were both formal, through quality improvement programmes and organised "study days... we try to reinvigorate them twice a year" [SM3], and informal, through the enthusiasm of clinical managers:

> "It was amazing… because it was visual and really easy for them to see and understand, they all… got involved… They thought I had gone a bit crazy too, 'what is she doing with this counting, and this board?' But I really enjoyed it because you could… go, 'this is what so and so tells us we need to do… come on let's do it" [CA1].

However, the most commonly reported method of supporting and sustaining KPI interest was through the identification of champions, either nurses with a specialist role or local nurses and midwives. The champions were viewed as having the role of really understanding KPI's and consistently helping others to understand outcomes and consider improvements. As a way of identifying how this would work, one participant offered their experience which involved formal education, requiring completion of a quality improvement project. This resulted in applying their learning to embed changes in practice and developing their own facilitation skills:

> "A lot of the time people are delighted to be asked. You've kinda brought them along… a little trick I learnt… Because I had a few different people and the facilitator as well involved, it didn't feel like it was just me. The same with other

> things that we've done since. I'd always say to the girls 'pick a few people'" [CA1].

The greatest motivator for engaging in and integrating KPI's into practice was the ability to relate them to improvement in care for patients:

> "Yes, it's a KPI, but it's understanding… that it can make a difference to that mum and her baby. That's what midwives would latch on to completely because they want to care for women and give them the best evidence-based care" [CM6].

However, understanding that a KPI can make a difference relies on more than the use of numeric data alone. Clinicians reported a need to "see the impact of that data, [otherwise]… it feels like it's for someone else's use" [CC4]. If evidence of patient impact was available, such as hearing a family's story as a live experience following a root cause analysis, or wider group discussion following a complaint, then greater engagement in practice development was reported:

> "[A complaint] came through our system recently which highlighted [poor patient care]… We got the team to come and present their experiences, what they'd done... Whilst that's difficult for some people to talk about, it's part of our philosophy about being open and transparent so we can learn" [DoN6].

Similarly, with the limited use of KPI's in the community setting, district nurses reported that having KPI's that reflected their specific contribution to patient care would increase ownership and motivate improvement. Despite the challenges, this was stated to be achievable if the necessary support was provided:

> "We know what we do, but it's very difficult to explain. It would be nice to have some evidence there: this is what we are doing; how can we move this forward, instead of just reacting to things all the time? It would help… make you want to develop further" [CC7].

Performance feedback is an important means of motivating nurses and midwives to take ownership of and act on KPI data. However, interviewees revealed that while managers stated that, "they're not having to collect [KPI data] for it to fall into some sort of bottomless pit, they get this information back" [DoN3], clinicians reported issues in receiving or accessing this feedback:

> "It's collected… and then it goes off into the wide blue yonder, we get very little feedback. We get feedback if it's not done... you might get a report at the end of the year... Whether it makes any difference to the patient outcome, I'm not sure" [CC3].

For some, feedback, and the ability to understand it, made a significant difference to whether they engaged in improvement:

> "I understand the dashboard, I think it's important that we're reviewing our rates, that we're constantly looking at how we can improve our care. But the other bits that I fill in like hand hygiene, I think it's just a bit of a paper exercise… I never see any feedback from that, I'm not sure whether I'm entering the right data for a start, where it actually goes to, who's looking at it and what I should be doing to make that any better" [CM7].

The most popular means of communication reported was the use of display boards. In some areas, the boards were positioned in public areas, whereas for others they were placed for staff information only. Within the hospital setting, the use of emails was an unsuccessful method of communicating KPI data to clinical nurses and midwives. Priority was given to patient care and staff stated they were too busy to check emails.

The data suggested that team working was required to support the use of KPI's. This was most strongly evident with the midwives and nurses in the acute sector. Interviewees revealed that this ranged from strategic engagement across all nursing levels, to more local team working either as part of a quality improvement project or in daily practice:

> "If we've noticed a trend... we come up with an action plan… staff nurses, HCA, dependent on what it was. The ward clerk, cleaners, everybody's a team... The more… the merrier, more ideas... Sometimes… different people walk in and they see things differently" [CA6].

Opportunities were reported for the sharing of learning which would support KPI use and practice improvement. These were mainly in the form of meetings or committees, although discussion with colleagues also featured and was reported to motivate initiatives. Engaging clinicians in this way helped to overcome the lack of ownership which resulted "when people feel that it's being imposed on them" [DoN4]. For example, some directors reported chairing regular meetings with all levels of nursing and midwifery:

> "It's for both ward managers and [managers]. We have a very open transparent approach. All the data around nursing KPI's is… freely available via the intranet… We'll go through individual areas of performance… and highlight who's doing what well and who's doing poorly and identify through the [KPI's] where we need support and intervention" [DoN6].

Conversely, when asked to articulate how staff nurses were engaged in KPI use responses suggested there was limited team working, little positive reinforcement and lack of involvement in decision-making:

> "By looking through [documentation] you can tell if they're… filling them in. They probably don't ask how well we're doing. It's only if you get negative feedback, then you will bring it up at safety brief" [CA7].

Other measures to motivate and engage clinicians with KPI's included the use of competition through the open reporting of KPI data across organisations, and celebration. However, while clinicians mainly viewed competition as being positive for motivating and improving performance: "they want to know 'where did I lose that five per cent?'" [SM1], it could also be seen as punitive and have a negative impact: "seeing 100 per cent drop to 50, somebody's head will roll, that is the way they feel about it" [SM1]. On the other hand, failure was also viewed as a motivator for improvement. For example, in an organisation with a very open approach to the reporting of KPI data:

> "When the [new dashboard] come out… we asked for the staff's views on it. What shocked me was they wanted it in order of where they were in the Trust… We did ask [what if you are at the bottom?], but they said, 'we still want it because, do you know what, you can only go up' [CA6].

Innovative ways to positively promote engagement with KPI's, and to encourage nurses and midwives to act on their data were reported. These included the use of newsletters, parties and the presentation of certificates of achievement and awards. Additionally, celebration ranged from reporting patient feedback at safety briefings "if somebody comments on the great care" [CM7], to being asked to present improvement work:

> "There's a quality indicator day and we've been encouraged to try and get a PowerPoint done and promote what we've done" [CC2].

6.3.2 Checks and balances

Providing the organisations' Executive Boards with assurance that KPI's were being used and acted upon was reported as a checking mechanism and increased confidence in KPI management and the data produced. Participants also reported that nursing management were responsible for making decisions about what information the Board received, and that they made similar decisions about information dissemination back down to the clinical level:

> "Ward-to-Board reporting is really important so that the Board gets to see all of those performance metrics. Any… that aren't delivering, there would be additional scrutiny, there would be holding to account" [DoN8].

Nevertheless, KPI data alone was insufficient to provide assurance at board level, and additional information was sought: "the [Board] don't just think about it in terms of numbers, they will ask for the further breakdown" [DoN1]. While responsibility to provide assurance at this level mainly lay with management, one organisation encouraged clinical representation at board as a means of checking the finer detail:

> "When [ward managers] go to their monthly performance meetings with the Board... they need to know what data they've got and why… They would expect questions on it" [SM5].

Nurses also articulated concern that KPI data may be used as a means to manage peoples' performance rather than to use them as a mechanism for driving improvement. Furthermore, findings demonstrated that checks by the regulators or internal personnel may place undue emphasis on accountability. This was disadvantageous in that it took the focus off KPI's for improvement and created a fear of being performance managed: "at the moment the management have been very hot onto [our clinical manager] because we have an external auditor coming in" [CA7]. To move forward with data collection when clinical managers failed to submit their KPI data citing staff shortages, they were encouraged to pass responsibility to their staff nurses without due consideration of the underlying problem:

> "With staff vacancies and shortages, a lot of staff some months weren't doing their KPI's… Sometimes it's left very much to the [clinical managers], and the [staff nurses] don't really have ownership. So, a lot of the wards are trying to bring it down a level to help them see how meaningful it is" [CA3].

Conversely, if managed supportively, performance management was reported to be beneficial:

> "We're going through that at the minute and we meet every week… and go through our performance indicators and say what we're doing to improve our compliance rates. It's good, you can get information that will help you to move forward. Any blockers, you've got the backup of the managers" [CM8].

Another consequence of overzealous performance checking and accountability, noted across participant levels, was a sense of growing dependence on data as a way of assuring that practice performance and quality were of an acceptable standard. At clinical level

this dependence could manifest itself as self-imposed burden. With their varied efficiency, data management systems either added to, or lessened, the workload:

> "Every week I do a MUST audit [of five charts]… Whenever entering the [monthly] data we would lift another five charts. I suppose we are replicating. Everybody does it... it's reassurance... I like to keep everything from the last couple of months… If the inspection people come they will ask for it... our managers ask us to have them" [CA2].

Multiple systems were the norm for KPI data collection but few could communicate with each other, causing frustration in locating and viewing KPI data as a whole: "we use loads and loads of different excel spreadsheets; how can we bring it together at ward level?" [SM4], and sometimes contributing to confusion:

> "I would not think staff would call this KPI's, this is just the dashboard… our figures [number of perineal tears, breastfeeding rates etc] and how they're performing. I probably wouldn't have called that a KPI, it's a dashboard. To me the KPI's are in the computer, these pressure areas, falls" [CM3].

The reliability of the KPI data was also called into question, with reports of confusion in understanding both KPI's and the processes involved in their use. Most clinicians described learning about KPI management through their senior managers. The quality of this varied, with some clinical managers resorting to the use of online resources and a few participants also suggesting a lack of KPI understanding by "some senior people. I don't know that they know what it is" [SM1]:

> "Initially the challenge was 'what on earth am I supposed to fill in?'… Basically, they said, 'whatever's been filled in before, that's what you've to fill in'… I think I'm reporting the right things" [CM7].

Confidence varied regarding the ability of KPI data to reliably and objectively measure nursing activity and effect improvement. Additionally, the elements of data collection and reporting came under scrutiny with the belief that:

> "Unless there's rigorous and accurate recording of the care processes/ bundle elements and consistency in application of the audit tool, the results will be unreliable. Who's auditing, how have they been trained, what are the checks and balances that you've put in?" [DoN2];

> "What I don't see is the rigour in the production of KPI's, the testing, the implementation, and are we confident it will lead to an improvement. What we do is go 'bumph', everyone has to do it" [SM4].

Several methods were reported as being designed to increase the reliability of KPI data. Peer review was the most commonly reported action taken to ensure the reliability of data collection due to the belief that it removed potential bias. To try and ensure strong inter-rater reliability when collecting KPI data, all levels of participant discussed the additional involvement of people designated as independent, this included quality officers, specialist nurses and independent auditors. The latter were reported to be cost restrictive. However, this was noted to result in a degree of data collection duplication:

> "We do the central lines and PICC lines. But equally the vascular team do it as well. It's kind of twice… to ensure we're following the process" [CA6];

> "If you're asking your support staff, are they going to give [questionnaires] to a woman who they know is complaining that she has been waiting four hours for her discharge?" [CM4].

Given the lack of understanding previously discussed under the sub-theme – 'Establishing ownership and engaging staff', there was a need to ensure that all nurses and midwives involved in data collection were trained to ensure consistency and reduce personal interpretation. Consistency was also reported as important because the scoring of some audits was set within 'all or nothing' parameters, and misinterpretations could make a significant difference to the results:

> "Making sure that people understand exactly what it is that they're auditing because [in] a bundle, you only have to go down on one element and you're at zero" [DoN2].

Participants largely did not discuss how the reliability of patient experience data was assessed, some reported it took the form of executive walkabouts or observations. In one organisation a set of criteria were reported to be used. Nevertheless, the possibility of variances occurring with so many people carrying out observations of practice was reported as a challenge, and no-one discussed preparation for this role:

> "There is a lot of critical thinking, and you have to make sure you understand what you're seeing" [SM2].

Clinicians reported that reliability was also impacted on by data burden. However, actions to overcome or manage this were noted, such as rostering time so that nurses and midwives were not under time pressures which had the potential to result in errors either in the collecting or entering of the data, or through the use of:

> "A dedicated IT team who… fill it in, so data quality is good… it's not somebody's doing it as well as their other job, which we know gives you poor data... Not everybody… will see the importance of data collection and you get disturbed" [CM6].

Additionally, human fallibility in reporting when under time pressure was highlighted and the reliability of information that was recorded on Datix, the incident reporting system used by most participant organisations and from which some KPI data was collected, came under scrutiny:

> "Incident reporting systems are reliant on staff reporting. Sometimes we cross reference with other sets of data to see how accurate they are... A third-degree tear… should come in through the incident system. Not always, if staff are busy. You cross reference it with the delivery suite log... Sometimes your KPI for third degree tears... won't be taken from incident reporting, it would be taken from the [log] in the first place" [CM2].

Another aspect of reliability checking was monitoring for gaming, where either data or processes were manipulated to provide positive results. For most, "there was a particular risk with clock-based and access targets that you get into gaming" [DoN3], as a result of external pressure to meet public expectation:

> "Four-hour trolley waits... it's a mad rush to get a patient into a bed and maybe they're not going to the appropriate ward, but… we have to report that up the road. You see it in the papers all the time, [journalists] love it: 'they had 12 breaches last night'" [SM3].

For other participants, the manipulation occurred in the numerical data. This was most frequently reported to be due to the pressure resulting from the need to meet targets for financial gain, and was evident in the form of subtle gaming through the aggregation of figures:

> "The midwife-led unit numbers are put into the whole unit's numbers… Third-degree tear rate for perineal repair… if you include all the women who've had sections in that, well, they were never going to have a tear, no-one went near their perineum… If [for] spontaneous vaginal delivery rate you've included a birth centre, then that's going to falsely increase your rate. … You wonder what it does to someone else's data" [CM4].

Finally, it was reported that reliable data was ensured by having clear KPI definitions, a sound evidence-base and guidance on how data was to be reported, alongside regular reviews of KPI dashboards and data collection processes. If the standard or care had changed, negating a need for modification, a case would often be made which was then

presented for consideration at board level. However, the soundness of some KPI evidence-bases to "show that there's a standard of nursing care available" [DoN2] was questioned:

> "One of the other issues was the robustness of the care bundles themselves… they don't meet the criteria of the IHI requirements" [SM2];
>
> "Some organisations that I've worked in, we've reported it as a number and some have reported it as a percentage... we either all do a number or we all do a percentage" [SM8].

6.3.3 Closing the loop

Participants in half of the organisations reported the use of formal facilitated support as a way of converting the raw KPI data into action to enrich practice. For example, working with the multi-professional team, with management support to release nurses and midwives and provide resources, resulted in the successful use of quality improvement [QI] methodology to reduce the postpartum haemorrhage [PPH] rate, and thus distress to mothers:

> "We know there was an improvement by measuring it on the dashboard and reports from the blood bank… of women requiring a transfusion... It was a PDSA cycle. We audited all the PPH notes for one month and looked at the drug management and realised that... the order of drugs… wasn't in compliance with the RCOG… We [questioned] medical and nursing staff… There was no standard... We laminated [flowcharts] for everybody… Had theory drill and a feedback session. Then asked ten [people] and the figures had improved slightly, but still weren't brilliant. We came up with this PPH box... you can reduce blood loss if you go straight into the right order of drugs" [CM3].

However, while improving practice through QI methodology requires knowledge and time, and often "staff just don't have the headroom or the improvement capability to look at that" [SM4], examples of improvement work without the use of QI methodology were also reported. When clinical nurses and midwives had managerial support and were engaged in decision-making, quite extensive changes to practice and the environment were achieved with measurable evidence of patient benefit:

> "A lot of our falls are around patients with dementia forgetting that they've broke their hip and can't walk... We've got a lot of distraction therapies in use now… we looked at the [physical environment]... We looked at light, noise... We would have had anywhere between five and ten falls per month. The last three months we've had no falls" [CA2].

While most examples of collaborative improvement were reported at organisational level, a few examples of regional work to improve practice based on KPI use were reported, such as reducing the rate of "stillbirths as part of a national programme" [SM4], and for a care bundle as part of a continence-related KPI:

> "This is an all-[country] pathway and it's quite cumbersome… we're working with our continence colleagues to say, 'how can we make it user-friendly?'" [SM7].

Assistance to support the use of KPI's for improvement mainly came from quality teams or specialist nurses. Although responsibility for the improvement of practice may have lain with clinicians, the provision of physical resources could be problematic especially if it was financial in nature. Conversely, "as long as we were… going to improve the service, I could have as many [machines]... as I wanted... As long as it was less than £5000" [CC2]. Where action to improve practice seemed challenging was in relation to problems requiring additional staffing:

> "We have ongoing issues with… blocked catheters and out of hours calls and… if we put nurses in to manage the catheters… then things do improve but we don't have the staffing" [CC3];

> "There's no money in the system... the word 'support', as in 'what can I do to help you,' but the actual, real, physical support, there's not a lot" [SM8].

For some participants, closing the loop to ensure action was taken on KPI data results was sometimes a case of 'doing whatever it takes', when, despite trying many different approaches, changes in practice had continually failed to embed and action was required:

> "One of our wards ... was consistently zero [with their KPI dashboard] ... Lots of complaints… and some safety issues... The morale was quite low and the leadership on the ward wasn't as it should be...Turnover rate was very high, lots of agency use. We changed the [nursing and medical] leadership..., personnel... and structure... Their dashboard [scores went up] and consistently have been thereafter. They now have the best stability, zero agency use… they top the charts in all our awards internally, the complaints have just dropped off and the feedback is consistently high" [DoN5].

Many of the examples of improved practice reflected actions based on service user feedback, rather than action on specific patient experience KPI's. Therefore, it was not possible to evidence measurable improvement based on patient experience data. The need for change may have been identified either by patients or relatives through comment

boxes in questionnaires. Changes to practice ranged from the relatively simple-to-achieve, to changes that took more effort and involved changes to building contracts:

> "The teas were going out before the breakfast. The feedback was that they would like it together, so we've changed practice around that... The cups were small plastic cups, people were saying, 'we'd like bigger cups, we'd like them to be insulated'" [CA4];

> "Patients saying, "It's too bright at night, we can't sleep." So we have just... put some dimmer lights in and it's taken some time because of the contracts" [SM6].

Additionally, action to meet the KPI target for "number of complaints" resulted in improvements being made based on individual feedback. Action taken on this feedback at clinical level not only improved practice at this level, but positively impacted on strategic goals. The information available in complaints was also used to inform organisational strategy:

> "One of the things that's really important is that we can demonstrate the impact on the patient. That might be reduced pressure ulcers… on a macro level, but on a micro level where incidents occur we've got a clear feedback loop in terms of demonstrating actions for an individual patient… That's why we review our KPI's, to make sure that they still align to the Trust's values and vision and strategy but also in relation to being relevant to making improvements" [DoN6].

However, responses in relation to how patient feedback was used to improve care was inconsistent and a small number of participants struggled for an answer. For community nurses, the responses suggested an ongoing relationship of feedback and negotiation: "It's something that we do every day in discussion with the patients" [CC4], while another nurse stated, "I don't think there's anything. I suppose like pressure sores, we have intentional rounding charts now… they work well" [CA7].

Occasionally, closing the loop was achieved by meeting the individual needs of nurses and midwives. For one midwife, while KPI's acted as the flag, further investigation and person-centred knowledge of her midwives helped identify action to address the problem:

> "From [the number of births] you're able to look at [number] of transfers... If you have one particular midwife who's always transferring someone for continuous monitoring, then... is it genuinely they've just had a really bad run… Or is it that six weeks ago they were involved in a stillbirth and now they're scared? Do you need to support them and how can you do that?" [CM4].

Again, with KPI's acting as flags, other examples of practice improvement illustrated a sense of being curious to explore trends and question what action could be taken to change these. Examples included actions on KPI's relating to falls and the removal of urinary catheters in the community, which involved action based on networking with colleagues across organisations:

> "One of the [wards] had the lowest rate of falls in the hospital and I thought, 'this is fantastic for the group of patients they have', but the other ward had one of the highest. I thought, 'you two have got the same bed base, the same type of patients, what are you doing that's so different?' Part of it was an [inexperienced] new ward manager... and there wasn't sharing because they were in different [locations]. It was like they were poles apart. When I got them working together their falls came right down" [SM6];

> "I've had three last week and three the week before... [patients who] failed their [trial removal of catheter] and they had epidurals. And I'm saying to myself, do we need to look at the source of anaesthetic? Should we leave those patients [a while]? ... Is it too early… because their mobility's not brilliant? We've nothing to compare it to because we had no previous clinic. I have a colleague in [another Trust] who's going to send me her figures to see if… that would help" [CC2].

6.4 SUMMARY

This chapter has reported the findings from phase two of the study, with particular emphasis on how KPI data influences decision-making at meso and micro level in healthcare organisations. Participants with a range of experience in KPI use, working in very diverse roles, provided a comprehensive overview of KPI management in practice. Barriers and enablers for maximising the use of KPI's have also been identified: some are pertinent to specific roles and others are more general and recognisable by all participants. Additional quotations that support these findings can be found in Appendix 20. The findings discussed here along with those from phase one are now drawn together in the following discussion chapter.

Chapter Seven: Discussion

In keeping with an exploratory mixed methods design, this chapter focuses on bringing together the quantitative data provided by DoNs on organisational KPI use and processes, with the qualitative contextual perceptions of nurses and midwives working at meso and micro levels. In isolation, each phase provides insight into various aspects of how KPI's are used; through integration (Figure 4.3, page 62), the findings present a more complete and detailed understanding of the factors influencing their use for decision-making in practice (Morgan 2014). With both phases reinforcing each other, the integrated findings focus on the challenges associated with KPI use under the following headings: the use of multiple KPI's and data burden; measuring what matters; data management; collective leadership; and situating KPI's within implementation science. In addition, to answer the research question, the findings are explored through the lens of quality improvement and implementation science theory. In this way the importance of transferring knowledge gained from KPI's into practice is emphasised.

The findings from this study indicate that participants have a desire to deliver the best care for their patients, but do not fully understand how KPI's can contribute to this. For managers, nurses and midwives to actively engage and take ownership of implementing KPI's into practice there is a need for them to have greater involvement in the decision-making aspects of the KPI process, from selection to evaluation, in order to make the connection between the use of KPI's and improvements to practice.

7.1 THE USE OF MULTIPLE KPI'S AND DATA BURDEN

Globally, numerous KPI data sets and frameworks have been established (NQF 2003; the KPI Institute 2013; NHS Group 2014). Data from both phases of this study nevertheless show that organisations still struggle to identify clearly which measures to select, and that tensions exist between ensuring public protection and minimising the workload involved in data collection. This would indicate little understanding of what KPI's are and what their role is, which is a significant finding of this study identified across all levels of nursing and midwifery. As Dubois *et al*. (2013), among many others, have stated, KPI's can provide a comprehensive and accurate picture of nursing and midwifery services,

demonstrating value and benefit in line with organisational goals and agreed benchmarks (NHS Group 2014; HSE 2015; Ham *et al*. 2016). However, the limited understanding as to how KPI's could contribute to enhanced patient outcomes raises questions about the effectiveness of their use for practice improvement. Evidence for this could be found when participants in phase two considered that those working at a macro level desired KPI data mainly either for monitoring or for statistical health and socio-demographic purposes. In support for this view many phase one participants also considered that national bodies influence KPI selection. This was at odds with participants' view of KPI's having a practice improvement role. This is a subtle yet important distinction that only seemed to add to the confusion about what is and what is not a KPI (chapter 6.2.1). Furthermore, participants considered that the time limits within KPI's, set by commissioning bodies for the evaluation of practice improvements, were unrealistic. Drawing on implementation theory, and in particular work relating to the PARIHS framework (Kitson *et al*. 1998) (Figure 2.2), this would suggest governing bodies may lack understanding of the amount of time it takes to make changes in practice. This is closely linked to the diversity of contextual factors that impact on the ability of healthcare practitioners to embed and sustain change (Brown and McCormack 2011; Harvey and Kitson 2016).

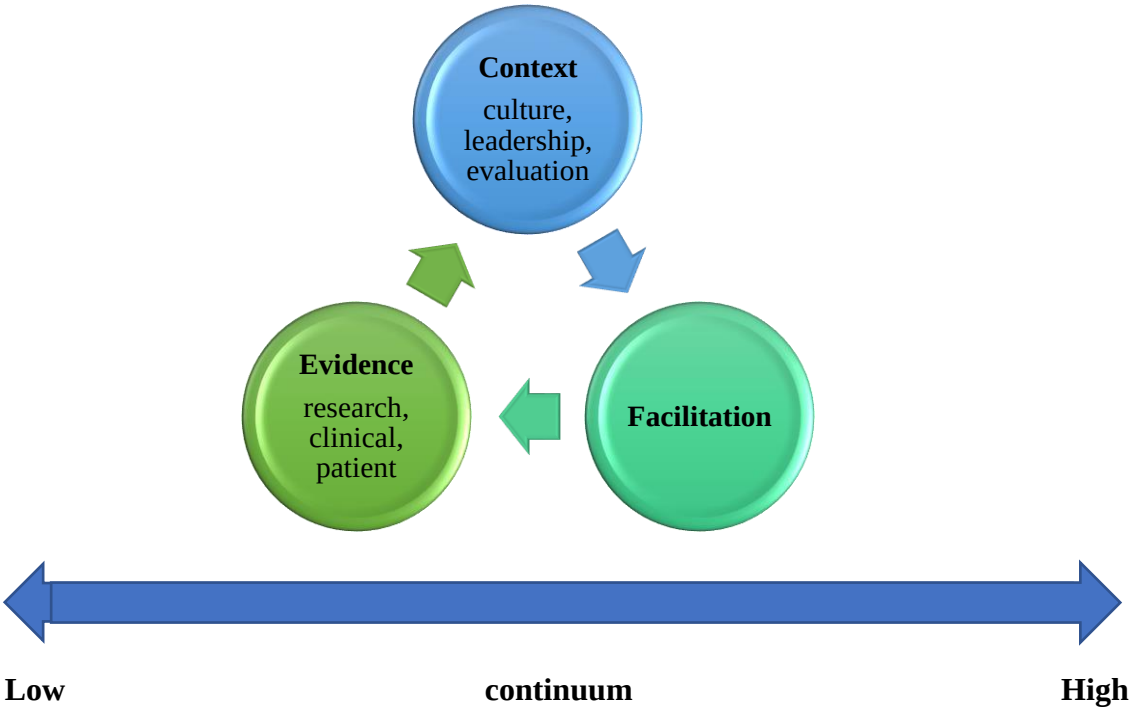


Figure 2.2 The PARIHS framework

Both phases of this study highlighted that nurses and midwives did not seem to fully understand KPI's, as they had limited engagement with the full KPI process. Phase one findings highlighted that data collection is the main way in which clinical nurses and midwives are involved in the use of KPI's. This was verified at interview, has been confirmed in previous literature reviews (Maas and Delaney 2004; Dubois *et al.* 2013), and would indicate that clinical nurses and midwives have little involvement in the full process of KPI management and implementation as described by Artley and Stroh (2001). Yet involvement, from the inception of KPI's to evaluation and implementation of action to improve practice, could potentially increase nurses' and midwives' understanding of the value and relevance of KPI's. This is an important issue, as highlighted by Wilkinson *et al*. (2000) in their primary care study which found that a lack of understanding may lead to an indifference to KPI's, which in turn may limit action on KPI data. Similarly, the use of KPI's as management tools may be overlooked (Wilkinson *et al*. 2000), thus reducing their effectiveness (for example, in workforce planning and the monitoring of care). Berwick (2008) points out that it is those people making the changes in healthcare who know most about the context and the mechanisms that will work to effect change. With this in mind, the application of Normalisation Process Theory (May and Finch 2009) would be beneficial. Similar to the PARIHS framework (Kitson *et al*. 1998), it encourages staff to explore the barriers that may exist in their areas of practice in anticipation that they will then take 'collective action' (the third component of Normalisation Process Theory) to address these, thus ensuring that implementation occurs (May and Finch 2009). However, Berwick's (2008, p.1184) argument, that staff should be "equipped to study the effects of their efforts, actively and objectively, as part of daily work", is reliant on a culture that is supportive of collaboration and collective leadership. This was not well evidenced in either phase of this study.

A culture of inclusivity is required if clinical staff are to be involved in the decision-making process. Involvement of this nature would enable staff to offer an opinion on the selection of essential KPI's, with the potential to ensure a greater focus on safety and quality of care. Within the PARIHS framework (Kitson *et al*. 1998), the involvement of staff in decision-making requires the establishment of a culture where shared decision-making is encouraged and supported through robust leadership (Brown and McCormack 2011). This would suggest that a context (an environment or setting in which practice takes place (McCormack *et al.* 2002) situated more towards the high end of the continuum

is required for successful implementation of KPI's. DoN's in phase one listed various opportunities for nurses and midwives to be involved in the use of KPI's. However, participants at all levels in phase two, stated that there was limited shared decision-making in relation to identifying the pertinent KPI's, situating context towards the lower end of the continuum.

This was also apparent through the listing of multiple KPI's by DoNs, providing evidence that the recommendation to use only a small number of important KPI's is not carried through in practice (DoH 2008; HIQA 2010; DoH 2017). At interview, DoNs explained that they were also responsible for KPI's relevant to other disciplines. They did not distinguish these in their questionnaire responses, which explains the listing of some non-nursing and midwifery specific KPI's such as 'complaint response times'. Qualitative data also confirmed that most of the KPI's listed in phase one were nationally mandated, with limited organisational involvement in KPI selection. Findings indicated that local councils, departments of statistics, professional bodies and networks, and national databases all contribute to the weight of data that is requested. With no national or organisational overview reported, the full extent of the workload in generating and managing this data is unknown. Nevertheless, it was reported to be having a negative impact on the efficiency of the system, and the administrative cost incurred was speculated to be significant. Qualitative findings further show that, nationally, the mandated data is either not always reported on or is not timely and cannot therefore drive improvement. This mirrors the observations made by Heslop (2014) who, in an editorial, raised concerns that data may be used for monitoring purposes rather than the aim of reducing patient risk.

A contributory reason for the proliferation of KPI's is the directive for development of measures that evidence safety, quality and compassion in care arising from national enquiries into healthcare failings (Francis 2013; Bubb 2014; Heslop *et al.* 2014). However, this increase in public organisational accountability, aimed in part at improving governmental performance, has resulted in negative behaviours (as surmised by Ossege 2012). These developments appear to have given rise to a culture that emphasises performance monitoring and holding to account, with the qualitative findings of this study highlighting the resultant anxiety and drive for assurance, as well as gaming, previously identified by Griffiths and Maben (2009). Due to the centralisation of national monitoring

and its distance from the practice setting, there is a misguided sense that having big data will provide the requisite assurance of performance, as reported in chapter six. This is then replicated within organisations, with reports of data being collected unnecessarily in anticipation that it might be requested by regulators. It would appear that the importance of burden not exceeding benefit, as stipulated in national guidance for nursing and midwifery KPI's (DoH 2017), has been outweighed by nurses' anxiety about performance management. Alternatively, for nurses who are not engaged in using KPI's, these demands for assurance are viewed as of little significance, demonstrated through the non-submission of KPI data or the submission of data with no further action being taken (section 6.3.2). This emphasises the view that nurses do not fully understand how KPI's could contribute to clinical practice, nor do they actively engage in practice improvement.

The demand for so much KPI data, as reported in phase one, for what appears to be purely monitoring purposes at an external level, sets the tone for what then occurs in practice. With little feedback, qualitative data suggests that the focus shifts away from KPI's being used for improvement and instead is directed towards a drive for assurance. This pressure for data increases incrementally down through the organisations as each level adds more KPI's until the end-point is reached in clinical practice. Since nursing is the one constant in care delivery (Hoi 2008) and interweaves with all other professions, it is not surprising that nurses and midwives are the key people to approach for patient data. However, the qualitative findings revealed that DoNs may not be aware of all the data that is collected, especially if it is not reported through nursing. For example, some interviewees stated that intensive care and midwifery data was reported through medical channels. Therefore, this leads one to question if the volume of data collected from the lists of KPI's provided by the DoNs in the questionnaires may have been underestimated. Thus, at the lowest level, nurses and midwives are expected not only to provide the KPI data, but are delegated the responsibility of acting on it and improving care. This is of additional concern when considered in light of Goddard and Smith's (2001) argument that pushing staff to deliver an unreasonable number of targets may increase stress, lower morale and ultimately compromise quality and performance.

The recognition by interviewees of the requirement to address the growing problem of data burden is in keeping with the call for a fifty per cent reduction in KPI's made by

Berwick (2015). There has been little discussion in national policy about how this might be achieved, although RCN Scotland (2016, p.5) recently highlighted the necessity for an "exit strategy" to be built into KPI's, acknowledging the need identified in this study to consider their 'retirement'. Principally, though, other than the requirement for regular KPI review (RCN Scotland 2016; DoH 2017), mechanisms or advice on stopping or reducing the frequency of data collection are rarely mentioned. Consequently, findings indicate that effective KPI's, which are well embedded in practice and achieve consistent compliance, continue to be collected at regular monthly intervals, years later. Some organisations had taken steps to review and reduce the internal data they collected but, although an effort had been made to challenge the need for successful mandated KPI's, the overall perception was that this was non-negotiable.

Non-negotiable factors tend to impact negatively upon shared decision-making, which was borne out by this research. An exploration of the decisions made around KPI's, based on interviews, revealed little evidence of organisational leaders being able to influence decision-making at a macro level. This suggests that the key role of macro leaders, in terms of transforming cultures and shaping the context to prepare it for change (Rycroft-Malone 2004), is not being realised to its full potential. When considered from this perspective and through the lens of the PARIHS framework, context falls to the lower end of the continuum (Kitson *et al*. 1998). While mandated KPI data is useful at national level as a means of monitoring practice, findings demonstrate that the identification of further aspects of care in need of improvement at an organisational level results in the implementation of new KPI's and ever-increasing burden on clinical practice.

Whilst acknowledging that improvement science requires measurement in order to assess the progress of implementation, for example in the 'study' phase of the PDSA cycle (Deming 1992, chapter three), it is argued that this need could be met by the use of tactical metrics rather than KPI's, as discussed in chapter two, which could then be reduced or stopped as appropriate. While the term 'tactical metric' was not mentioned at interview, a similar concept, which was used to educate staff, was described as: "auditable measures underneath something like a statutory target on infection control" (DoN 6). However, the introduction of this concept would require a clear understanding of KPI's at all levels, which findings show is lacking.

Neither phase of this study uncovered much use of theory for KPI implementation, and the PDSA cycle, which was mentioned by a few interviewees, was the only implementation tool identified. This suggests that there is limited knowledge and use of implementation science and quality improvement methods, which presents a challenge in practice. Without this knowledge, nurses and midwives remain unaware of the benefits that can be gained from theoretical understanding in both guiding successful implementation through the identification of, and action to address, barriers, and also in supporting the evaluation and sustainment of improvement. Implementation tools such as PDSA cycles may help to guide a change in practice, but unless theory is applied to help predict or explain the factors which may disrupt practice improvement, it may not be embedded and sustained.

7.2 MEASURING WHAT MATTERS

The concept of measuring what matters was clearly important for interviewees and sits within the evidence construct of the PARIHS framework (Kitson *et al*. 1998), which comprises evidence drawn from research, professional consensus and patient opinion. Researchers argue that these sources are equally important if evidence is to be highly relevant and effect changes in practice (Sackett *et al*. 1996; McCormack *et al*. 2002; Rycroft-Malone *et al*. 2004; Turner *et al*. 2017). However, both the quantitative and qualitative findings of this study support Pearson's (2003) view that there continues to be a lack of clarity about what is important to be measured. In phase two of this study it was apparent that, where organisational culture recognised the unique perspectives of nurses, midwives and service users, decision-making for KPI selection was inclusive of all. Organisations were seen to listen to feedback from a variety of perspectives and through this engagement to address the need for meaningful indicators. New avenues of communication were opened, resulting in managers learning what was important for practice, approving resources, and being willing to retire KPI's or reduce data collection. The organisation's values were matched to actions, existing KPI's were reviewed and the development of new KPI's was aligned to strategic goals (Artley and Stroh 2001; Drake 2013). However, where the organisational culture was not conducive to collaborative and participative partnership (Boomer and McCormack 2010), the realities of the practice context were seen to be ignored, resulting in irrelevant or ineffectual KPI's being enforced. In such organisations, despite policy calling for healthcare to provide service

users with the necessary skills for partnership working, there was little evidence of collaboration with patients and families (National Advisory Group on the Safety of Patients in England 2013). Aligning these findings to the PARIHS framework (Kitson *et al*. 1998), it is clear that genuine engagement with the collection of multiple sources of evidence developed a positive culture in which evaluation seemed more meaningful. This positions evidence and context at the higher success end of the PARIHS framework (Kitson *et al*. 1998). Conversely, organisations who dismissed the concept of gaining evidence collaboratively worked towards the least successful low end of the PARIHS continuum (Kitson *et al.* 1998) in terms of evidence and context.

Exploring more fully the evidence from multiple sources, it became apparent that patient evidence was not particularly well represented. While Donabedian's (1988) model gives equal credence to structure, process and outcome measurement, it would appear that outcome is mainly assessed in relation to physical health as opposed to outcomes of care delivery as perceived by the patient and family. Examining the lists of KPI's in the quantitative findings revealed the collection of only a small number of patient experience KPI's. This was of interest, as phase one of the study also revealed that patient experience KPI's were the second most frequently quoted as being of value for measuring the quality of care. The qualitative findings indicated that the use of patient experience KPI's remains focused on the acute sector. Community settings reported little gathering of patient experience data, citing similar challenges to those working in the acute sector, such as ensuring anonymity and honest responses, which remain to be addressed (Glasper 2016).

Opportunities were also lost for clinical nurses and midwives to act as patient advocates in decisions made about the selection of patient experience KPI's, as they too had limited representation at strategic level despite this being recommended (RCN 2011b; HIQA 2013). This may be because nurses and midwives are considered to lack the necessary KPI knowledge for effective collaboration, in which case the required development should be supported, a similar argument to that which Berwick puts forward for patient and family inclusion and collaboration (National Advisory Group on the Safety of Patients in England 2013). Joint participation of all management levels and patients or carers in KPI selection was reported in only one organisation. In most organisations, but not all, clinical rather than patient opinion was sought. This information was funnelled

through senior management to the directors for presentation at executive level. While the PARIHS framework (Kitson *et al*. 1998) states that clinical opinion is a valuable and viable source of evidence, in isolation its relevance to the selection of KPI's is weak. Therefore, to address patient issues and concerns, evidence from both patients and clinicians is required; a finding that was limited in this study.

The argument for engagement of clinical staff and service users in all aspects of KPI management is further strengthened when the findings from phase one are considered. The scarcity of indicators in fields of practice, other than maternity and the acute sector, suggests a disparity in KPI use. Given the drive for primary care delivery in the community (Primary Care Workforce Commission 2015), the paucity of community-specific KPI's identified in the questionnaire responses warranted further exploration, with phase two confirming a significant gap. Two points emerge from this finding firstly, that research has yet to demonstrate what best practice is for certain aspects of community care; and secondly the struggle experienced by district nurses in trying to identify what should be measured.

In relation to the first point, while the adaptation of KPI's, such as the prevention of pressure ulcers and falls, was described by managers as having been successfully implemented in community residential and nursing homes, it was reported by district nurses that KPI's and guidance struggled to address circumstances unique to the care of patients in their own homes. The international literature corroborates and attempts to address the KPI gap in community care. In Canada, a shortfall in staff triggered the need for initiatives to strengthen primary care with subsequent measurement (Barnsley *et al*. 2005), while in the UK it was geographical variation in the quality of care across primary mental health services which led to KPI development (Shield *et al*. 2003). However, research has to date focused on the development and use of KPI's in general practice (Barnsley *et al.* 2005) and communal community care (Fossum *et al*. 2011). KPI's designed for use in settings such as those providing specific palliative and dementia care (Vasse *et al*. 2012) will be very difficult to apply to the delivery of this care in patients' own homes, hence a tension exists. Viewing this argument in relation to the PARIHS framework (Kitson *et al*. 1998), it can be seen that empirical research utilising both clinical and patient and/or carer evidence would potentially help to identify which aspects of care it is important to measure in this setting. Until this gap is addressed, qualitative

data from this study suggests that the 'one-size-fits-all' enforcement of KPI's, onto areas of practice for which the evidence-base was not designed, is destined to fail.

In relation to the second point that emerged from the scarcity of community specific KPI's - the struggle district nurses experienced in trying to identify what mattered to them and what they felt should be measured - if the aim is to improve patient care, it is undoubtedly the patients who should be asked this question. For KPI's to be meaningful for patients being cared for in their own homes, their engagement is even more crucial than that of nurses and midwives. It is nurses with their practice experience, and those in receipt of community care who live with the problems, who can provide the expert advice needed to inform the evidence-base and decision-making about what is important to measure for improvement (McCance *et al.* 2012). Service user engagement in KPI development would also contribute to discussion of how patient choice should be addressed within KPI's when this is contrary to the evidence-base (Olsen 2011; Dwamena *et al.* 2012; Kötter *et al*. 2013). Policies currently state that targets must not take precedence over the patient's wishes (DoH 2017): although it was not clear in these findings if nurses and midwives were aware of this, they reported in discussion that their priority was to meet the patient's needs, not the targets. While the arguments above specifically focus on community KPI's, they are also highly relevant to all areas of practice including those with well-established KPI's.

The impact of recent national policies (NHS Scotland 2015; DoH 2017) calling for all organisations to collect data specifically to measure their patients' experiences was evident in the high number of patient surveys reported in phase one. However, this was contested at interview. Viewed from a theoretical perspective, opinion about patient experience as evidence of performance can also be seen to vary. Discussion of evidence features less in Parson's theory (1960) and Normalisation Process theory (May and Finch 2009), but does play an important role in the PARIHS framework (Kitson *et al*. 1998), the Iowa model (2017), Perrow's theory (1967) and Donabedian's framework (1988). An advantage of the collection of patient experience data, highlighted by Donabedian (2005), is that it can be obtained close to real-time, whereas outcomes of physical interventions may take time to manifest. He also states that measurement of only physiological function will result in a different assessment of performance than if psychosocial function is included (Donabedian 1988). Although Perrow does not talk about patient experience as

evidence *per se*, he does take a subjective view and discusses 'technology', by which he means cognitive processing. Perrow (1967) uses the term 'technology' to distinguish between the different approaches to problem-solving that can be found, for example in custodial or socialising institutions and psychiatric agencies. When discussing 'craft technology', Perrow (1967) states that because the nature of thought processing is sometimes unanalysable, staff must rely on feedback from patients. As an evidence-based process model, the Iowa model gives credence to various forms of evidence including regulatory and national initiatives, and philosophies of care (Iowa Model Collaborative 2017). It also requires consideration of the strength of the evidence, and whether the implementation of a change in practice is appropriate to a particular setting (Iowa Model Collaborative 2017).

Although all organisations that took part did report their national surveys, for some interviewees these were not seen to represent patient experience. Essentially this was because they were simply used to monitor organisational performance at a high level and lacked the meaningful detail required for improving practice. If supplementary methods were not employed, then interviewees perceived that no patient experience data was collected. This is concerning given that the quantitative data reveal that almost a quarter of participants did not collect patient experience data and therefore have no feedback on which to base service improvement. Additionally, regardless of whether or not supplementary patient experience data was collected, it was perceived to be of little consequence to other professionals at board level. This potentially results in organisational strategies that do not reflect either what is important to the patient or the reality of day-to-day practice (Francis 2013). Therefore, as highlighted by the findings of this study, what is being measured is not necessarily always meaningful and may not have the desired impact on practice.

A fundamental premise of the PARIHS framework (Kitson *et al*. 1998) is that while research is strongly favoured as a source of evidence, all sources, including the views of the patients and carers, are meaningful and constitute evidence (Helfritch *et al*. 2010; Harvey and Kitson 2016). Consequently, the limited, and sometimes neglected focus on patient opinion and experience which these findings highlight, places this form of evidence on the lower end of the PARIHS continuum. Indeed, this is also argued to be the case for 'culture' given the perception that not all professionals appreciate the value

of seeking patient experience data. Interestingly, attributing less importance to patient experience data is at odds with the importance placed on addressing patient complaints and adverse incidents, identified in phase two. The fear of litigation and adverse negative publicity for an organisation appears to play a role in defining what is important and requires attention.

Rather than being proactive and seeking to explore the opportunities that patient engagement might provide, some boards were perceived to seek reassurance in their numeric data, blind to the limitations imposed by this narrow way of thinking, such as obstructing the development of person-centred cultures (McCance *et al.* 2015). The paternalistic approach of the medical model is apparent in the interviews and is seen to thwart attempts to listen to what the patient has to say. In part this may be due to the lack of credibility and inadequacy of methods used to gain and report informative patient data, or, as Turner *et al*. (2017) state, it may be because the type of evidence preferred varies depending on the service or professional group.

Surveys remain the mainstay of data collection but, as has been revealed, these are not regarded as effective. While both phases of the study confirmed the complexity of measuring the holistic elements of care to which nursing contributes so much, there was evidence of some progress in this regard (Griffiths *et al*. 2008; Dubois *et al*. 2013; Abrahamson *et al*. 2015). Based on the view that person-centred outcomes should be designed around what the 'person' believes is important for further improvement (McCormack and McCance 2017), McCance *et al*. (2015) reported positive initial testing of eight person-centred KPI's, and elements of these were identified in both phases. Co-designed by service users, KPI's such as these would provide measurable data that meet quantifiable requirements and address the call for KPI's that contribute to the psychosocial aspects of nursing practice (Dubois *et al*. 2013; Noh and Lee 2014). In this way, 'co-design' moves the use of evidence towards the high end of the PARIHS continuum (Kitson *et al.* 1998). These KPI's are therefore relevant for both clinicians and patients, and there is increased potential for their application across nursing and midwifery settings, which would also meet the need for comparability.

It is a significant challenge to design KPI's that are flexible enough to be applied across the diversity of nursing and midwifery practice. This is especially difficult when

considered alongside the need for KPI's to be comparable (Griffiths *et al*. 2008; HIQA 2013). Once adapted to suit the distinct needs of practice, a KPI is no longer comparable at national level unless negotiated for use in similar practice across organisations; this requires collaboration, which appears to be limited. As reported in chapter six, this difficulty was taken advantage of by professionals and served only to hinder improved performance and quality of care. Nationally, the desire for comparability is an assurance mechanism and is at its roots driven by public and political concerns (Ossege 2012). At this level the aim is for KPI's to monitor practice. In theory they should also drive improvement through a natural competitive desire (Bandura 1977), as identified in both phases of this study, and through shared learning across organisations (St Pierre 2006), of which there was evidence in phase one but less so in phase two. However, this is dependent on the data being reported publicly, which phase two shows did not always happen or was not timely, and improvement was restricted because the guidance within the KPI's limited their application to certain settings. Therefore, it is argued that a compromise must be found between reliable comparability and flexibility if KPI's are to be used effectively for improvement, which is the ultimate and most important aim.

The selection and implementation of KPI's can arguably contribute to the creation of a conceptual representation of reality within healthcare, as the focus is on that which is measured (Hauser and Katz 1998). For this reason, it is important to ensure that organisations are measuring what matters by engaging with those who matter. This may mean developing alternative methods to overcome patients' communication difficulties that may act as barriers hindering service user involvement. Consistent with the literature, this study reveals that this is still not always the case (Walker and Dewar 2001; Phillips *et al*. 2007; Kötter *et al*. 2013). Qualitative findings also indicate the enforced use of KPI's that hold no relevance to the practice setting, which in turn contributes nothing to improvement because a problem does not exist, and serves only to bolster overall KPI compliance or creates a negative impression of practice if taken out of context (chapter 6.2.2). Normalisation Process theory (May and Finch 2009) includes four components that require attention if implementation is to succeed, of which the first two, 'coherence' and 'cognitive participation', have relevance here. May and Finch (2009) state that coherence will be achieved if those involved have an understanding of why it is important to implement an innovation. This then links with the second component of cognitive participation whereby there is buy-in from the stakeholders. Similar to the PARIHS

framework (Kitson *et al*. 1998), this theory works on a continuum. Thus, if there is low coherence or cognitive participation, the likelihood of successful implementation is reduced (May and Finch 2009).

7.3 MANAGEMENT OF KPI DATA

In an initial exploration of the findings related to ownership of KPI data, it was revealed that, in order to own the data, practitioners really needed to collect it. This was somewhat surprising given the disadvantages highlighted by nurses and midwives in collecting data, in terms of the increased workload and cost which outweighed the benefits. Similar to the literature, all levels of interviewee stated that the primary benefits of data collection were increased understanding and ownership (Groff-Paris and Terhaar 2010; Foulkes 2011). It was also clarified at interview that it was the clinical managers who mostly collected the data, unless practice involved a caseload or one-to-one care where it was the responsibility of the individual practitioner. While being responsible for data collection potentially has merit, the data highlighted that a dichotomy existed between the perception of nurses and midwives that collecting data would translate into greater understanding and engagement of KPI's, and the reality of practice (section 6.3.1). This was particularly evident when exploring the responses of nurses and midwives working in more IT-efficient organisations. Despite these participants not being responsible for data collection, they reported just as much understanding and ownership of KPI's as those working in organisations where they had to collect the data. Instead, the participants talked about having regular opportunities to meet and discuss their KPI's as an organisational team. Similarly, clinical managers engaged their staff through regular conversations about quality improvement, and were clear about their accountability. In addition, they felt they had more autonomy and were supported to negotiate and take action. This would suggest that linking KPI data collection with improved understanding and ownership of KPI's overall is too simplistic an idea. Drawing, once again, on the PARIHS framework (Kitson *et al*. 1998) as a way of understanding what was occurring, it is arguably the organisations fully engaged with KPI's that displayed the behaviours most often seen at the high end of the context continuum of the framework. An environment that was conductive to having regular discussions about KPI's and being aware of the accountability of nurses and midwives indicated a culture with strong

leadership that valued their contribution to practice improvement (Schein 2010; Brown and McCormack 2011).

The dichotomy that exists between the espoused and actual value of KPI's on practice is also important in terms of assurance. Paradoxically, not only is the manifold use of KPI's causing increased workload as evidenced in both study phases, but it may result in false assurance at national level if the receipt of data, whether 'good' or 'bad', is assumed to make practice and the quality of care visible. The reality is that this is impossible to achieve, especially from purely numeric data (Werner and Asch 2007; Griffiths *et al.* 2008; Berwick 2015). McCormack *et al*. (2002) state that in an effective culture - that is, one on the high end of the PARIHS continuum (Kitson *et al*. 1998) - there is a need for both the 'hard' outcome data and the 'soft' data of user experiences in order to be able to evaluate practice. In this way, as culture moves towards the high end of the continuum (Kitson *et al.* 1998), so too does the sub-element of evaluation. However, the negative impact on patient care that results from the effort involved in providing the measured data remains unseen in what is not measured, and consequently managers continue in ignorance of reality (Francis 2013). Similarly, caution should be exercised regarding over-reliance on data triangulation, which was popular with managers. This could lead, for example, to an assumption that finding an anomaly in one KPI is the answer to non-compliance in another, and could be persuasive enough to stop further, more revealing investigation. Due to a recognition of the need to augment data assurance with additional information sources, most executive level directors undertook site visits and scheduled regular engagement with all staff (chapter 6.2.3 and 6.3.1).

Apart from the community setting, this study did not identify as an issue the under-use and limited adoption of computer systems referred to in previous reports (DoH 2008; Donaldson *et al*. 2014). Exploring the findings from phase one more thoroughly in phase two interviews, all organisations were noted to employ numerous systems and data collection methods to obtain KPI data. However, this appeared to cause problems: as phase one revealed, most patient care data is still collected on paper, with interviewees complaining that the documentation audits used to provide evidence for KPI's were the most burdensome. The required data had to be extracted manually and collated for reporting through computers. Other data, such as staff rostering, was compiled solely on computers, while yet more data was collected both manually and on computers, such as

incident reporting. These systems in turn acted as reservoirs of information for KPI use. Phase two subsequently revealed that these systems were rarely capable of 'talking' to each other to pull down and merge the required information into one KPI database. This complicated data collection and reporting processes causing duplication, confusion and frustration rather than aiding understanding and decision-making (DoH 2004; Parlour 2013). Nurses and midwives identified a need for data to be succinct and easily accessed if they were not to be discouraged from engaging with the information, and managers resented the time spent looking for what they needed. This is consistent with a concern raised by Berwick (2015) about systems of data management that, if they were not fit for purpose, technology would only make them work faster, not better. However, Mannion *et al*. (2005) report that, when effective systems are matched with supportive technology, research has shown a positive relationship with high performing organisations. In such situations priority is placed on the development of cutting-edge information systems to support the management of performance data (Mannion *et al*. 2005). Similarly, in this study, when efficient systems with designated information technology (IT) personnel were employed, data burden was rarely mentioned and interview conversation focused on data use. Also, where these personnel were the phase one 'other' data reporters, they provided the benefit of skilled updating of systems following the review, addition or removal of KPI's.

Despite the large number of KPI's identified in phase one, interviewees reported that data in midwifery was collected efficiently, possibly for the reasons reported in section 6.2.2. Here, though, interviews revealed further issues with KPI reporting. Firstly, the sheer volume of data collected, as identified in phase one, posed a simple logistical problem, as computer screens can only present so much information before legibility becomes an issue (RCN 2011a). Secondly, the way in which some organisations managed this difficulty resulted in a two-system approach. One system appeared to take priority and reported maternity KPI data, while the second system assumed less priority and reported organisational KPI data. This created confusion as to what a KPI was (Rutherford 2008) and what was important, and potentially reinforced a 'them and us' mind-set. There is a strong argument to be made across all services for reducing KPI's to those that are actively being used for improvement or that are important for monitoring purposes, and for each service to present a single report of their specific and general organisational data. Furthermore, in this setting the evaluation of practice through multiple measurements did

not seem to result in a complete picture of care being achieved, as might be assumed. Rather, the midwifery KPI's identified in the quantitative data appear to rely on a narrow source of performance information, few of them measure experience, and the evaluation of performance relies on single rather than multiple methods (McCormack *et al*. 2002). Therefore, evaluation in this context would be situated towards the lower end of the effectiveness continuum in the PARIHS framework (Kitson *et al*. 1998).

Sixty years ago, March and Simon (1958) proposed that the flow of information in organisations outstripped managers' capacity to process it, and that to simplify problems they relied on managerial cognition to scan, analyse and make decisions regarding action (Johnson and Hoopes 2003). Since then the information flow has increased significantly, as demonstrated in phase one by the increasing growth and reporting of KPI's. The ability of modern systems to scan data trends was commented on favourably by participants. Whereas previously a gradual increase in the incidence of a harm, such as the number of patient falls, might have been subconsciously accepted as a new norm, now nurses can see the trend as it develops and take action (Phillips *et al*. 2007). However, while IT visuals increase managers' ability to scan data, the analysis and resultant decision-making are still largely dependent on manageable data volume, contextual understanding and experience. Qualitative findings suggest that these are issues which need to be improved.

As the qualitative findings demonstrated, human fallibility, gaming due to various pressures, and changeable contextual issues may all contribute to the provision of inaccurate data, for which managers need to be vigilant. Additionally, the study revealed that, although there were occasions when feedback on data failed, overall reporting within the hospital setting was good. Yet despite all organisations providing some method of displaying KPI results, nurses and midwives still reported a lack of KPI understanding, and ignored or failed to see the relevance of the displayed data to their practice. This supports the finding of Burston *et al.* (2013) that, despite progress in the collection and reporting of KPI's, they remain at the periphery of clinical practice. While this was true for most of the participant organisations, it was less evident where there was additional input in the form of ongoing organisationally inclusive discussion and active engagement in KPI use and decision-making. The extra level of facilitative support provided by a few organisations, through shared learning and engagement in decision-making regarding the use of KPI's, did appear to make a difference, strengthening ownership and helping

nurses interpret and act on their data. Mc Cormack *et al*. (2002) argue that it is the characteristics of leadership, culture and evaluation in Kitson *et al*.'s (1998) PARIHS framework which may best capture and characterise issues of context. In these few organisations, the descriptions provided by participants of their collaborative and inclusive experiences provide evidence of strong leadership, culture and evaluation, thus moving the element of context towards the high end of the continuum in the PARIHS framework (Kitson *et al*. 1998).

Although surveys were the main method to gather patient experience data, other techniques were also employed. However, challenges were identified in the management of this information. Neither phase revealed a reporting method capable of pulling this data together to provide a cohesive picture. This often resulted in one overarching patient experience KPI – such as 'the number of survey responses' or 'number of people recommending the service' – being included in dashboards, possibly because this was the only or easiest option, which Griffiths *et al*. (2008) advise may not be the most effective decision for practice improvement. As well as providing little useful information, this restricted the visibility of survey items and limited the analysis undertaken at board level unless specifically requested or reported (Greenhalgh *et al*. 2014). It also meant that when the more meaningful narrative data was presented, it was separate from the other numeric data, arguably emphasising differences in the level of importance given to each. Where less emphasis was placed on patient experience data, nurses and midwives reported making their own decisions on what action to take, if any, and there was no challenge or follow up. Thus, contrary to the advice of the National Advisory Group on the Safety of Patients in England (2013), there is limited incorporation of patients' views into organisational practice. IT and social media were noted in phase two as avenues being explored to facilitate greater inclusiveness in the collection of patient experience data. However, given the diversity of service user abilities reported at interview, significant challenges remain to be overcome in providing everyone with an opportunity to be heard.

7.4 COLLECTIVE LEADERSHIP

Organisations have been identified as consisting of many co-existing cultures, and they all impact on organisational performance (Schein 2010). While the concept of performance is as complex to understand as culture (Mannion *et al.* 2005), the central

importance of leadership for cultural change and continuing performance improvement is well documented and was also found in this research, albeit to varying degrees (DoH 1999; Schein 2010; National Advisory Group on the Safety of Patients in England 2013). Recently, there has been a focus on the need for collective leadership as a means of developing cultures where responsibility and accountability for performance lies with staff at all levels (West *et al.* 2014; NHS Improvement 2016). However, qualitative findings reveal limited evidence of collective leadership and staff working together to reinforce the desired organisational cultures or to improve care within and across trusts, despite the reporting structures listed in phase one. Instead, a more autocratic and top-down form of leadership was generally identified. Even in one organisation where participants indicated a culture of collaboration and inclusion, there was evidence of autonomy being suppressed: for example, although a KPI may have had no relevance to an area, it was still enforced in order to meet the desire for organisational and national comparison (chapter 6.3.1).

The literature clearly explains the importance of developing leadership qualities and skills that will encourage staff to challenge, take calculated risks and learn from experience (Francis 2013; National Advisory Group on the Safety of Patients in England 2013). Additionally, Moss Kanter (1999) argues that successful change management comes about if *everyone* affected by the change is actively involved and does not feel as if they are just the tools or subject of the change, which this study has shown is sometimes the case. May and Finch (2009) affirm this within their Normalisation Process Theory. The more inclusive and thorough the action taken to achieve implementation, the more likely it is to succeed. This, then, places the component of 'collective action' at the higher end of the continuum. More can be achieved from a workforce if they are treated as human beings and involved in decisions regarding their work (Wedderburn Tate 1999; Graham-Dickerson *et al*. 2013). They need to be able to contribute and to believe that their contribution is valued. However, the latter, if it is to be meaningful, should extend beyond data collection, which findings reveal was the main way in which clinical nurses and midwives were engaged in KPI management. The Iowa model (Iowa Model Collaborative 2017) encourages the use of evidence from many sources, and proposes that clinicians are prepared for change in practice but, as a process model, it is linear and didactic which may offer limited consideration of culture and leadership.

More recently, leadership training for *all* levels of staff has been recommended, without which it will be difficult for the culture of the NHS to change and overcome the challenges of quality improvement (Jasper and Jumaa 2005; Dixon-Woods *et al.* 2012). Leadership is important for those who are required to work with the competing demands of clinical decision-making, staff relationships, organisational systems and authority (Dopson 2007). Both data sets would suggest that all of these factors are present for those working with KPI's. While leadership training was not a focus of this study, it was identified as important by a number of participants in phase two. For the clinical nurses and midwives, the knowledge gained was used to establish ownership and engage their staff to act on KPI data. A strong focus on collective leadership recognises that it is not only the executives and managers who are expected to be leaders but also individuals at all levels within the organisation (Mannarelli 2006; West *et al*. 2014). For transformational or collective leadership to become apparent it is necessary to develop cultures where everyone has an opportunity to contribute or lead (West *et al*. 2014). Without effective leadership it can be difficult to build and sustain effective working cultures (Brown and McCormack 2011). Thus, contexts that sit at the low end of the PARIHS framework (Kitson *et al*. 1998) are more likely to have autocratic leaders, whereas those at the higher end will have leaders who are able to work through their staff.

By virtue of their role, DoNs as organisational leaders have a unique advocacy responsibility for nursing and midwifery, through which they can not only raise concerns on behalf of staff but can influence change for improvement. Phase two revealed that, although DoNs were aware of staff concerns relating to KPI use, when it came to influencing change external to their organisations they felt powerless. Whilst they did challenge the usefulness of some KPI's, there was little evidence of constructive conversation or negotiation with the mandating bodies. Why this occurred is beyond the remit of this study, but is suggestive of a reluctance to buy into collective leadership at a national level. Nevertheless, DoNs, as nursing advocates, have a responsibility to take action and, because of their position, do have an opportunity to address this situation. Speaking as a collective voice to policy makers can result in managers discovering that most obstructive rules are within their power to change, "apart from some regulatory barriers" (Berwick *et al*. 2017, p.2161). This study has revealed that DoNs are arguably responding to demands rather than taking risks and making decisions about what they want and need from KPI's.

The negative impact of external bodies in relation to KPI use is evident in both phases, although phase two demonstrated that concerns stretch beyond DoN level. There is no doubt that these bodies have an important role, but they appear not only to limit the ability of organisations to decide for themselves which KPI's will be of most benefit, but to create resentment. For example, a factor influencing KPI selection was reported by a phase one participant as: 'Told to by…' [Y11]. Furthermore, as demonstrated in phase two, external bodies are curtailing organisational and clinical risk-taking for practice innovation and improvement, by encouraging instead a culture focused on monitoring for assurance. This contrasts with the opinion of the National Advisory Group on the Safety of Patients in England (2013, p.44), as set out in an open letter to the NHS where they state the need to strike a balance:

> "between the hard guardrails that keep things in proper order and the culture of continual learning that helps everyone to grow".

Where organisational culture is focused on assurance rather than the successful implementation of evidence, it reflects a setting in which collective leadership is absent. Senior leaders are required to create an environment that encourages staff to develop and make appropriate decisions, while holding them to account (Brown and McCormack 2011). Nevertheless, argue Hodder and Marples (2005), there is a skill required in knowing when to stand back and when to step in, and ensuring a balance is achieved between helping staff to feel empowered rather than abandoned. The findings of this study suggest that the culture in some organisations is one of fear regarding regulation and inspection rather than one that invites checks as part of partnership working. Whether this stems from a punitive regulatory or organisational culture, or both, is unclear. However, action could be taken at executive and managerial level to turn this around so that nurses and midwives do not feel performance-managed and end up over-collecting data 'just in case'. By engaging collectively with nurses and midwives as an organisational leadership group, more can be achieved because the whole is greater than the individual parts. This would also demonstrate to clinical managers the importance of their leadership role in setting the culture, something of which they are often unaware (Brown and McCormack 2016).

While quantitative data demonstrated various reporting strategies across organisational levels, qualitative data showed that health professionals at board level were sometimes perceived not to be working in partnership. As the main stakeholders in health service

delivery, doctors and nurses are accountable for the services they provide, and as such have an obligation to work together to achieve the best outcomes for their patients. Nevertheless, power plays between nurses and doctors have been well documented (Mannion *et al*. 2005; Speed and Luker 2006) and are seen in this study at all levels. Nurses and midwives perceived that they had limited influence when differences of opinion arose between themselves and their medical colleagues. For example, it was stated that doctors at executive level placed less emphasis on meeting KPI targets used for organisational comparability, while trivial disagreements over where doctors should hang their coats threatened compliance with infection control KPI's. In their qualitative study, Brown and McCormack (2016) identified similar autocratic medical behaviour. However, while West *et al*. (2014, p.7) describe collective leadership as the "distribution of leadership responsibility onto the shoulders of every person in the organisation", Brown and McCormack (2016) state that there will be occasions where senior leaders may be called upon to hold others to account, which arguably would include peer accountability at senior level. The latter, however, was not evident in this study, which found that negotiation at board level was more of a struggle and there was no indication as to where the authority for decision-making lay.

Whilst the complexity of these power and control relationships between doctors and nurses presents a challenge to boards to provide stronger leadership, it was also seen between nurses themselves, at national level in professional and departmental bodies, through to clinical level. Clinical nurses reported subversion of managerial authority by ticking the appropriate KPI boxes to appease their managers and then focusing the team's attention on what they considered to be more meaningful. This reflects a lack of open communication and collaboration that was reported at all levels, with resultant frustration of nurses and midwives at their limited involvement in decision-making. Here again the findings can be linked to the weaker contextual characteristics of the PARIHS framework (Kitson *et al*. 1998) demonstrating that potentially useful KPI's were not being fully exploited as nurses and midwives were not involved in decision-making processes. Consequently, management remained unaware either of how meaningless the KPI's were to practice or the challenges involved. With collective leadership, the aim is to generate commitment as a team to address such issues by setting out expected leadership behaviours in organisational strategy (West *et al*. 2014). Collective leadership, both inter and intra-professional, would support collaborative working, with everyone accepting

responsibility and accountability within their teams and to the wider organisation and service users. The subsequent evaluation of leadership would be based on aligning behaviours to the strategy (West *et al*. 2014).

In contrast to the "command-and-control" leadership culture described above, there were also cultures that produced positive findings in relation to KPI use (West *et al*. 2014, p.14). In phase two, the organisations where KPI's appeared to have a strong impact on driving improvement, there was evidence of a collective leadership culture, with those interviewed displaying the traits and behaviours of transformational leaders (Kouzes and Posner 2002; Tappen *et al*. 2006; West *et al*. 2014). At all levels, interviewees clearly articulated the role KPI's played in their practice, acknowledged their role in leading the development of high-quality and compassionate care, and demonstrated examples of staff engagement. Communication relating to KPI use was apparent within and across teams at all levels. Nurses and midwives reported involvement in decision-making and were confident in reporting failures as well as successes, knowing that open and honest discussion was encouraged and used for learning by their colleagues. In this way, while responsibility lay with nurses and midwives, its purpose was not performance management. Some clinical managers reported to board level, in line with the communication structures identified in phase one, but were supported by their managers. This in turn could potentially help to develop their skills for future career progression. They were familiar with their data and could relate it to what was happening in practice. In these organisations, nurses perceived themselves to have autonomy to act in the best interests of their patients; they could and did challenge authority and adapted practice on their patients' behalf even if it deviated from KPI compliance (Rambur *et al*. 2013; Greenhalgh *et al*. 2014).

McCormack *et al*. (2002) suggest that these positive factors – including, for example, involvement in decision-making, supportive staff relationships, collective leadership, and authority to innovate – provide evidence of strong contexts when assessed within the PARIHS framework (Kitson *et al*. 1998). In addition, qualitative data in these organisations demonstrated the use of more than one source of evidence, further strengthening the likelihood of successful practice improvement. A degree of service user engagement and/or gathering of patient experience was identified. Similarly, staff survey data was viewed as important to an organisation because it was acted on promptly:

"they're not wasting any time finding out why staff are not satisfied" [CC2], reinforcing the value placed on staff and the links between staff and patient satisfaction (Aiken *et al*. 2014). DoNs were visible to the nurses and midwives and role-modelled respect through problem-solving with them, inviting challenge and celebrating success.

Collective leadership also requires service users to be leaders (Centre for Patient Leadership and FPM 2013; National Advisory Group on the Safety of Patients in England 2013; McCormack and McCance 2017). However, with this aspect of collective leadership often neglected according to both phases of the study, patient experience data took less priority or was overlooked due to the limitations in collecting detailed feedback and in presenting and reporting the data. In this respect, and as reported previously in this chapter, when considered within the PARIHS framework (Kitson *et al.* 1998), a valuable source of evidence is overlooked and an opportunity is lost in terms of improving those aspects of practice which are important to the service users. Interviewees reported that when collected, the use of narrative data, especially in the form of patient stories, was particularly successful in securing emotional engagement and initiating action for improvement. Conversely, none of the practice improvements identified in phase one were reported to arise from patient engagement. West *et al*. (2014, p.15) argue that, as with inter-professional team-working, "collective leadership with patients would require a redistribution of power and decision-making", reflecting Perrow's (1967) theoretical stance that staff must exercise their discretion and power to seek feedback that will help to explain that which is difficult to analyse. The findings from both phases certainly suggest that organisations are working on innovative ways to improve collaboration with service users. Nevertheless, patient leadership is more than Patient and Public Involvement, encompassing patients who, with support, can lead and manage their own health and well-being, and use this to influence others (Center for Patient Leadership and FPM 2013). To a small extent this was illustrated in phase two but will hopefully be developed further if clinical nurses and midwives are themselves supported as leaders.

7.5 SITUATING KPI'S WITHIN IMPLEMENTATION SCIENCE

An extensive review of the literature and the findings of this study have highlighted the limited knowledge of nurses and midwives regarding how to use KPI's to influence practice in an effective and consistently meaningful way. It has become apparent that the

successful use of KPI's for quality improvement needs to be underpinned by theory related to knowledge utilisation (Greenhalgh *et al*. 2004; Burston *et al*. 2013), and the various theories and processes that promote KPI use have been drawn on throughout this discussion. This may help to explain why getting KPI evidence into practice is not straightforward (Rycroft-Malone *et al*. 2002), despite Berwick's (2008) assertion that to accelerate improvement a range of methodologies should be embraced, and also despite research acknowledging the availability of numerous tools. The innovation of practice is by its nature unique: it requires the design of flexible programmes of action where nurses and midwives are encouraged to take risks and try new ways of doing things, with mistakes tolerated and action taken (Berwick 2015). However, as the findings from both phases show, innovation is not something that nurses and midwives are trained for; in some organisations, this may be especially challenging given the weight of evidence demonstrating KPI use for monitoring and assurance purposes rather than quality improvement. In this study the focus on assurance can be seen to have a negative impact, confirming that it is ineffective as a driver for improvement and instead may lead to fear, as suggested by Berwick (2015). It is claimed that improvement will only be achieved if situated in cultures that support the use of theories and methods in improvement science and that understand that change takes time (Berwick 2015; Ham *et al*. 2016). In such environments, their role for improvement will be better understood and lead to effective use.

There are many theories within implementation science that would be useful in supporting the implementation of KPI evidence into practice. This study has identified components which appear in many of these theories, such as the need for evidence, leadership, motivation and consideration of context. However, having looked at the findings in their totality, it was apparent that they particularly aligned to the PARIHS framework (Kitson *et al*. 1998). The constructs of the PARIHS framework (Kitson *et al*. (1998) can be seen to weave and interlink with many aspects of the study data (Figure 7.1). It acknowledges that multiple evidence sources, context and facilitation are interlinked components of knowledge transfer that may be essential for the successful implementation of KPI's into practice. In exploring the qualitative data there are some areas where it is clear that organisations value evidence in all of its forms. However, in others, policy and research evidence were favoured, with the quantitative data demonstrating that little consideration was given to the benefits that could be achieved

by utilising multiple sources. Some organisations demonstrated strong contexts with transformative and collective leadership where people felt included and evaluation was encouraged. However, the converse was also evident, and between these opposites there were organisations with a mixture of strengths and weaknesses, such as those with good leadership but which struggled with evidence in terms of patient experience. This is not surprising given that healthcare is a complex working environment which is impacted by a wide variety of internal and external influences.

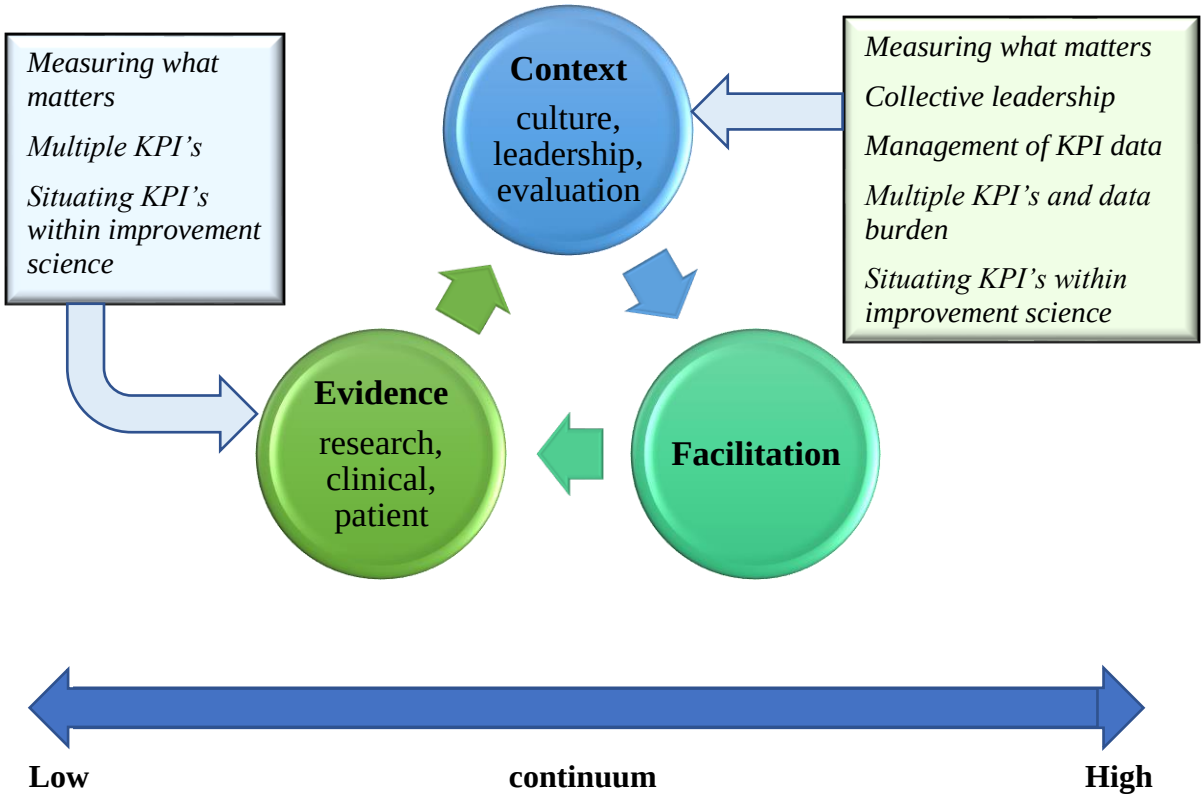


Figure 7.1 The PARIHS framework aligned with the study findings

One construct of the PARIHS framework (Kitson *et al*. 1998) that was not so evident was that of facilitation. However, the Health Foundation (2013) state that quality improvement initiatives are more likely to succeed if clinical nurses and midwives are supported by facilitators who are competent in quality improvement methods, approaches, tools and techniques. Despite this, facilitation was not explicit in any of the other implementation theories reviewed. When it appeared in this study, facilitation appeared to have value for the effective and sustained use of KPI's. Harvey *et al*. (2002) differentiate facilitation into 'task' and 'holistic'. Task facilitation is described as being the provision of help and support to achieve a specific goal, while holistic facilitation is

that which enables "individuals and teams to analyse, reflect and change their own attitudes, behaviour and ways of working" (Harvey *et al*. 2002, p.580). The researchers state that these terms are not mutually exclusive and, as with the constructs of evidence and context, exist as extreme points on a continuum (Harvey *et al*. 2002).

Facilitation is identified by Harvey and Kitson (2015) as the most useful strategy for achieving the implementation of evidence, while according to Eccles *et al*. (2005) it also assuages the complexity of practice through the opportunity for collaborative decision-making on which improvement approaches will suit individual practice environments. In the recently revised i-PARIHS framework detailed below, Harvey and Kitson (2016) argue that it is facilitation which activates the other three components of the framework: innovation, recipients and context. It is the ability of the facilitator, which does not have to be a formal role, and the facilitation processes, that enable the recipients to adopt and apply the innovation, tailoring the intervention to meet their particular context (Harvey and Kitson 2016). Unlike training, which has been identified as having limited success in bringing about change (Coomarasamy and Khan 2004; Williams and Smith 2017), facilitation aims to:

> "help individuals and teams think creatively about how their performance could be improved by utilizing the new knowledge being introduced" (Kitson and Harvey 2016, p.296).

In both phases, where successful implementation of KPI's was reported, elements of facilitation could be identified. This was especially apparent in the second phase when the implementation of large scale and multi-disciplinary innovations required more in-depth knowledge of quality improvement tools and facilitation. However, it was also evident on a smaller scale where clinical managers demonstrated facilitative skills to encourage their staff to act (Judah 2017): for example, by ensuring inclusion and ongoing discussion on impending changes or by purposefully offering opportunities to people who might have been reluctant to become involved. Furthermore, while KPI's produce data which can provide hard evidence that improvement is required, nurses and midwives may lack expertise in interpreting and acting on it (Dixon-Woods *et al*. 2012; Berwick 2015). Although clinical managers were ideally placed to facilitate, as they had the required knowledge of culture and context, they accessed additional support from facilitation or quality improvement teams such as those listed in the quantitative findings, which produced more focused approaches to improvement.

In the original PARIHS framework (Kitson *et al.* 1998), the construct of 'evidence' included evidence from research, as well as staff and patient experience (Rycroft-Malone *et al*. 2002). This continues to apply in the revised framework, but the construct is broadened and renamed 'innovation'. This is based on the premise that evidence-based guidance, such as that on which KPI's are based, is typically adapted to fit the context into which it is to be applied (Harvey and Kitson 2016). Whilst KPI use alone may increase performance and quality of care, qualitative findings showed that this was difficult to sustain if nurses and midwives did not believe they were meaningful to their practice and thus did not own and engage in their use. An example of failure to sustain innovation, which is possibly attributable to a lack of facilitation, was the implementation of some financially incentivised KPI's.

Despite a sound evidence-base, if KPI's were not viewed as relevant, their use stopped when funding ended. This finding is supported by Mannion *et al*. (2016) who found that financial incentives had little impact on safety and quality improvement. Data also suggests that the evidence produced by KPI's is not valued by nurses and midwives because it is not understood, or there is just too much of it, or we are not measuring what is meaningful. Thus it was reported that nurses walked past and ignored display boards, viewing them as for someone else's use. In contrast, successful innovation, as defined in the i-PARIHS framework (Harvey and Kitson 2016), is evident in findings describing staff collaboration and inclusion in decision-making, where their opinions are valued as evidence and where patient feedback is sought and acted on. Where multiple forms of evidence were collected, interviewees reported successful innovation (section 6.3.3). Berwick (2015) supports the use of patient experience data, such as that achieved through survey feedback, as a means of listening to service users, but he goes further to highlight the need for their inclusion in all healthcare decision-making. Thus there is greater opportunity to seek the opinion of service users, which in turn provides additional evidence for action.

The new i-PARIHS 'recipient' construct emphasises the importance of considering the impact on, and made by, those people involved in the implementation, either as individuals or groups (Harvey and Kitson 2016). This reinforces the previous discussion that collective leadership is necessary for the successful transfer of evidence into practice.

The influence of this recipient construct is especially evident in chapter six, where the necessity of establishing ownership and engaging staff was highlighted. The lack of consideration given to the impact on staff is also apparent in both data sets, particularly in respect of data burden. Equally, the impact of KPI data on practice, when evaluated under this construct, demonstrates how some nurses struggled to identify any improvements. This is not necessarily because improvement has not occurred, but that a lack of KPI understanding and engagement in decision-making regarding practice improvement results in nurses and midwives who are disinterested or oblivious to KPI use and their *raison-d'être*. The facilitator role is therefore to look for barriers such as these that may exert a negative influence during implementation (Harvey and Kitson 2016). In contrast, participants who were enthusiastic about practice improvement, and who described in detail the changes made following KPI use, had developed their knowledge and skill through education in quality improvement and/or by support from quality teams or dedicated facilitators.

The construct of "context" remains unchanged in i-PARIHS except that, with the complexity of practice in mind (Eccles *et al*. 2005), it now encompasses the need to consider aspects of context from macro to micro levels, as well as external influences (Harvey and Kitson 2016). In this study, external influences were clearly very influential in KPI use and created many frustrations. Taking cognisance of the various contexts in which innovation was planned, success was achieved when leaders facilitated staff engagement, demonstrated enthusiasm for the change and responded to local concerns. This creation of joy in work through engagement and celebration is gaining prominence as a principal element for achieving improvement, and should be encouraged (Berwick 2015). Although practice improvements based on KPI data were identified in phase one, the level of detail was not sufficient to determine if facilitation had played a role in successful implementation. However, understanding the importance of culture and context in the uptake of innovation, interviewees believed that greater staff inclusion in decision-making for KPI use at the local level would result in sustained support, which is in keeping with Graham-Dickerson *et al*.'s (2013) finding. Successful innovations, such as those described in section 6.3.3, involved facilitation at many different levels depending on the recipient and context needs. This ranged from organisation-wide facilitation of PDSA trials by quality improvement teams, to the engagement of local champions to promote buy-in and sustain the innovation.

All organisations in phase two reported providing quality improvement support in some form. Where nurses and midwives availed of this support, cohesive team-working was more evident and decisions were made that translated into action. Individual responsibility and accountability appeared to be reframed not as something to be feared, but as an opportunity to actively improve patient care. However, only a few examples were provided of improvement based on such support, and the closest reference to the application of theory was the use of the PDSA tool. This might be a capacity issue or, as with KPI's themselves, it may be that there is limited understanding of what can be achieved from such facilitative support, and therefore clinical managers do not consider accessing it:

> "They do discuss the [KPI] scores but I don't know how much is a coaching and improvement conversation. That's where we [the quality improvement team], would like to get more involved, 'OK what can we do about it?'" [SM7].

There is a challenge in practice that staff lean on tools such as PDSA rather than implementation science theory. Both data sets revealed little understanding of either how implementation science can be of benefit in guiding innovation to ensure than barriers are identified and addressed, or how implementation science can support the evaluation and sustainment of change following implementation.

Another approach which is supportive of holistic facilitation is that of practice development. With a focus on the promotion of person-centred cultures, practice development also uses facilitation to engage staff, producing greater commitment to and responsibility for the change or development, and results in ownership and more successful implementation (Boomer and McCormack, 2008; Manley *et al*. 2008). Working in tandem, practice development and quality improvement strategies and tools would provide a compendium of resources. These would support staff to explore and make known their local contextual knowledge, which findings have shown impact on KPI effectiveness, and would aid decision-making about implementation strategies, interpretation of data and testing cycles of change (Kitson *et al*. 2008; Marshall 2014; Abrahamson 2015). Access to quality improvement and practice development knowledge and skills, when actively encouraged by management as demonstrated in phase two, would help staff to address the imbalance whereby the focus is on performance management rather than decision-making for action (St Pierre 2006). It would also

prevent improvement being seen as management driven, and demonstrate commitment to a more transformative way of thinking about practitioner engagement (St Pierre 2006; Kitson *et al*. 2008).

It can be seen from this discussion that the most useful lens through which to look at the use of KPI's in practice is that of implementation science, and in particular those frameworks which encompass facilitation. The importance of giving consideration to a range of forms of evidence and to the elements of context – culture, leadership and evaluation – has been well reported in implementation science, but the element of facilitation is often neglected.

7.6 SUMMARY

This discussion chapter has integrated the findings from both phases of the study and merged them with policy and theoretical literature. In doing so, barriers and enablers that influence the effective use of KPI's for decision-making in practice have been highlighted. Good examples of effective organisational KPI use to improve the safety, quality and patient experience have been identified. However, analysis suggests that too much data is being collected, and much of this has no focus on improvement. Ineffective data management is compounding data burden (Mattke *et al*. 2003; RCN 2011b) and negatively impacting on healthcare cost and patient care. Nurses, midwives and service users, who will know what is important to measure, are not being consulted. Instead there is over reliance on existing KPI's to identify problems. Accessing of quality improvement and facilitative support is limited, therefore opportunities to achieve maximum value from KPI data is lost. It is argued that only through collective leadership, with responsibility and decision-making for improving care taken on by all staff, will KPI use result in positive patient outcomes. If the desire to do what is in the best interest of the service users can be harnessed then improvement will happen. Harnessing this desire appears to best be achieved through facilitation which engages the collaboration and participation of all stakeholders.

Chapter Eight: Concluding Chapter

In this final chapter, the conclusions drawn from the study findings are outlined, providing a summary of the key points of interest. The study's contribution to the existing knowledge-base on how KPI's are used in practice will be presented, and the implications and recommendations arising from the findings will be detailed. Consideration is also given to the limitations of the research conducted.

This study has achieved the objectives set out to answer the research question in relation to how KPI's are used to influence nursing and midwifery practice. The range of KPI's currently in use across the UK and ROI have been identified, as have the processes for their implementation, monitoring and reporting (objective one). In addition, this study has advanced understanding about the factors that influence the use of KPI's by nurses and midwives (objectives two and three). Previous research on KPI use has focused on their selection and development as well as data collection and reporting, leaving healthcare professionals with little information regarding the influence of KPI use on nursing and midwifery practice. Evidence demonstrates that KPI's can improve safety and care quality, but this research has been successful in identifying several factors which influence KPI use that are of importance to nurses and midwives.

8.1 CONTRIBUTION TO KNOWLEDGE

The expectation that implementation of KPI's will automatically lead to improvements in practice is contested. This research highlights that policy makers and healthcare leaders should take account of the complex interplay of factors that can impact on the effectiveness of KPI's, before mandating their introduction. Furthermore, the need for collective leadership across all levels of nursing and midwifery is offered as having the potential for enhancing effective KPI use. Collective leadership provides everyone with the opportunity to take ownership of, and engage with, the collection, analysis, dissemination and action arising out of KPI data, for practice improvement. However, this perspective is insufficient without some universal understanding and agreement around KPI's, coupled with collaboration and inclusion in decision-making about their usage. Consequently, prerequisites for the implementation of KPI's leading to a positive

change in practice are: a clear single definition for KPI's in healthcare; enhanced understanding of what KPI's are; and knowledge of implementation science frameworks to allow healthcare teams to most effectively translate evidence into practice. Using implementation science frameworks and exploring further the use of facilitation may offer better outcomes for staff and patients.

This study provides a 'systems' view of KPI's, how they are used in practice and, arising from that, the identification of factors that influence nursing and midwifery practice. Most empirical research has focused on the selection and development of KPI's, as well as data collection and reporting processes. While previous studies have explored nursing and midwifery decision-making and the implementation of evidence into practice, there has been little relating explicitly to KPI use.

The questionnaire used in this study has been successful in identifying many KPI's currently in use. Findings indicate a proliferation of national bodies requiring KPI data with no centralised strategic overview nationally or organisationally. This fragmented situation has resulted in a failure to address both the growth in KPI's and the retirement of those that are no longer relevant or actively used for improvement. Consequently, there is a negative impact at the clinical level with increasing nursing and midwifery workload and healthcare cost. Although policy stipulates that the choice of KPI is crucial and measurement should be based on those aspects of care that are important to nursing staff and patients (NHS QIS 2005; RCN 2011b; HIQA 2013), the evidence presented in this thesis indicates that this is not happening.

Principally, this is because, as suggested by the findings, clinical nurses and midwives have little input into decision-making regarding the KPI's they use in practice, and methods for patients' inclusion in the decision-making process are perceived as being unsuccessful. Despite their limited inclusion either externally or within their organisations, nurses and midwives are required to make clinical decisions based on KPI's over which they have little control, resulting in frustration and negative behaviours, such as failure to engage. They are also held to account for KPI's that are multi-disciplinary, which is challenging unless cultures of collaboration exist. It is also perceived that financially incentivised KPI's, designed to motivate practice

improvement, may compromise quality improvement due to the time constraints imposed by the commissioning cycle.

While ‘big data’ is not necessarily numeric, it is argued that the management of large volumes of data in the healthcare sector is still in its infancy and thus focused on the easier-to-analyse numeric data. As well as leading to a drive for numeric assurance rather than improvement, the collection and analysis of qualitative patient experience data at the national level has lower priority in most regions and has fallen behind. The foregoing is also reflected at organisational level although it is this information that nurses and midwives especially value. The study also found that patient care data continues to be mainly collected manually. Additionally, whilst there are numerous electronic systems for the management of data they are not capable of communicating with each other. Therefore, the onus of collating and reporting clinical KPI data from these multiple manual and electronic sources remains with nurses and midwives.

Clinical nurses’ and midwives’ understanding of KPI’s has been identified as largely inadequate, and consequently they struggle to fully engage with their potential for enhancing practice. Furthermore, the level of understanding at senior manager level also appears to be limited. To optimise the use of KPI’s for improvement, all staff require a basic level of understanding of both KPI’s and quality improvement methodology. According to the participants, while the term ‘KPI’ is unfamiliar to staff, they are able to identify what is being measured in practice. This is not enough. Participants reported that where there is comprehensive understanding of KPI’s they become part of the daily conversation: nurses and midwives begin to think pro-actively, viewing their practice critically in terms of how it can be improved, and engaging in change. However, training alone has very limited success in bringing about change, as contextual factors also need to be addressed (Coomarasamy and Khan 2004; Williams and Smith 2017). Though facilitation was seldom mentioned, where it was evident and provided locally by skilled clinical managers or by organisational teams, it was noted to increase KPI understanding and to result in data being recognised as evidence of care quality. Nurses and midwives were engaged in decision-making and thus were motivated to act.

The innovative approach of this study in exploring KPI use at meso and micro levels of nursing and midwifery has highlighted that collective leadership and engagement of all

nurses and midwives in the implementation of KPI's is crucial to improving practice. The effective use of KPI's requires that practice moves beyond 'top down' leadership to one where all nurses and midwives, regardless of their level, take responsibility for their KPI's and engage in improvement. This is dependent on nurses' and midwives' understanding of KPI's as a mechanism for generating evidence to improve practice, as well as their involvement in decision-making regarding all aspects of the KPI's that they use. Where organisational leaders foster a culture of continuous quality improvement with visible collaborative and collective leadership across all levels, findings show that KPI data extends beyond assurance to become a positive influence for improvement.

Finally, there is no support for the expectation that the use of KPI's will automatically lead to improvement in practice. Findings demonstrate that there is a need to consider KPI's within a framework of quality improvement. Access to improvement science provides many sources of information which positively influence the translation of evidence into practice. As the literature and this study have revealed, nurses and midwives do not make use of either the tools or the knowledge available, whether theoretical or practical. For KPI's to be used effectively, consideration needs to be given to the nature of the evidence; the context in which implementation is to take place; and the use of facilitation to activate and sustain change, which the findings of this study suggest is missing. Based on the data from this research it is argued that facilitation could potentially make the difference between KPI use for the purpose of monitoring and assurance, and its use for the improvement of care. By working with nurses and midwives, facilitators, whether internal or external to the practice setting, can help them identify and overcome barriers to knowledge utilisation which the complexity of culture and context exerts.

8.2 STUDY LIMITATIONS

There are limitations to this study regarding the questionnaire's relatively low response rate of fifteen per cent, which may have been due in part to the effort required to complete the open text boxes, especially the listing of KPI's. Whilst KPI numbers were stated by some to be very large, this is consistent with the findings of the literature review (Appendix 3). However, a lower response rate was to be anticipated since research indicates that organisational leaders are the least likely to respond to questionnaires

(Weiner and Dalessio 2006; Baruch and Holtom 2008). The principal reasons for non-completion of questionnaires are that: a) participants are 'too busy'; b) the topic is not considered relevant (Fenton-O'Creevy 1996); and c) none of the usual response rate enhancement techniques are effective at executive level (Cycyota and Harrison 2006). An additional limitation faced by the researcher was that ROI was undergoing a significant restructure of its healthcare system, which had implications for the number of director posts. These posts were being sharply reduced and some of those contacted may no longer have been in post, thus affecting the response rate. Furthermore, ROI had undertaken a similar scoping exercise within the previous six months, possibly creating a degree of response apathy.

The descriptive cross-sectional questionnaire met the conditions for obtaining information on current KPI use and was not designed to study associations between variables or provide evidence of cause and effect (Hasson *et al*. 2015). However, inherent in the use of any new questionnaire is the question of how valid and reliable it is, and normative data will not be available as a baseline for comparison of results (Mathers *et al.* 2009). Questionnaire completion was based on self-reporting, and the data are therefore potentially subject to bias. However, in using a mixed methods design, the findings from the interviews indicated that, if present, bias has had minimal influence on the results. Similarly, between eighty and ninety per cent of the respondents confirmed the collection of the KPI's listed in the questionnaire – which were those most frequently cited in the literature – indicating a low probability of inappropriate reporting. In addition, with the researcher's increased understanding of what a KPI was (and was not), came the realisation that inclusion of some of these frequently cited KPI's in the questionnaire was inappropriate. In hindsight, 'agency and nurse bank usage' and 'assessment of nutrition requirements' should not have been included.

A further limitation of the questionnaire was that it used the term 'clinical staff' and did not clarify if clinical managers – that is ward sisters/charge nurses or team leaders – were to be regarded as managers or clinical staff. The assumption was made that these would be viewed as members of clinical staff. Similarly, when terms such as 'senior' or 'lead nurses' were used in the responses, it was assumed that these were senior clinical nurses and not nurses working at managerial level. Staff nurses were not included in phase two of this study: while this would have helped to confirm (or otherwise) the views expressed

by participants about staff nurses' lack of understanding, it remains unknown whether more insight into KPI use would have been gained.

The use of local collaborators in phase two presented both strengths and limitations. While their local knowledge of the organisation was beneficial in ensuring full sample participation, there may have been potential for selection bias. Given that the local collaborators organised recruitment within each of their organisations, the participants' viewpoints are potentially unrepresentative of the wider nursing and midwifery population. Data from both phases were based on the knowledge and experiences of the participants at a specific point in time. Replication of the research will invariably result in different outcomes in other settings (Rolfe *et al*. 2001). It is for the reader to decide if the findings of this study resonate with their individual experiences and work situations (Guba and Lincoln 1981; Rolfe *et al*. 2001).

As with all research carried out for the achievement of an academic award, the analysis is personal to the researcher. Efforts made to make the analysis and interpretation of data as transparent as possible have been detailed in chapter four and in the appendices.

8.3 IMPLICATIONS AND RELATED RECOMMENDATIONS

The conclusions drawn from this research have implications for practice, policy and research that need to be examined in order to improve understanding about the use of KPI's in nursing and midwifery. These implications form the basis of the recommendations and overall conclusion.

8.3.1 Implications and recommendations for practice and education

The factors influencing KPI use have important implications for their effectiveness in nursing and midwifery practice. The sub-theme of establishing ownership and engagement indicates that a principal factor in the successful use of KPI's is an understanding by nurses and midwives of: a) what constitutes a KPI; and b) the rationale for their use. Without this, people perceive only the burden of data collection for someone else's benefit. As part of the development of an improvement culture, all nurses and

midwives, pre-and post-registration, should understand what KPI's are and how they are used to improve practice.

The importance of collaborating with nurses and midwives, and including them in decisions made about their practice, should not be underestimated. If the desire to improve care for their patients can be harnessed, a major hurdle in KPI use will be reduced. This will only be achieved and sustained if nurses and midwives are included in discussions and come to own and engage in practice change. The greater the inclusion and collaboration across levels in an organisation, the greater the buy-in and focused attention on improvement. In addition, organisations should select two or three aspects of practice for focused attention every year based on an identified need for improvement. Collective leadership is a means of ensuring that all nurses and midwives take responsibility for their part in the delivery of quality care. However, this also requires engagement and some form of facilitation, otherwise KPI's become process-oriented and do not move beyond being a data collection exercise. With many methodologies and tools available for the transfer of evidence into practice, there is a need to support clinical access so that the data collected becomes meaningful and helpful to staff and service users. Organisations should develop facilitation strategies for practice development and quality improvement based on KPI use, and should consider the inclusion of facilitation training in current leadership programmes.

Patient experience data was reported to be a valuable commodity but various challenges were identified in obtaining this, such as generating honest and critical feedback from patients including those with physical and cognitive limitations. Yet the latter probably access services most and can contribute information that is useful for improving practice. Additionally, methods of reporting patient experience data are inadequate compared to the reporting of numeric data, resulting in less emphasis being placed on it and reducing opportunities for learning. Consideration should be given to alternative methods of measuring and reporting the experiences of service users, with particular focus on those who require support in communicating.

This study found that a large number of KPI's are in use. Some participant organisations have started to review the data they collect – essentially an audit of audits – with the aim of reducing data collection generally. Unfortunately, organisations do not have the

authority to reduce or 'retire' mandated KPI's. Without review and control, the ever-increasing demand for KPI data from numerous sources results in a cumulative burden for nurses and midwives. The number of KPI's needs to be significantly reduced, with superfluous and duplicate indicators retired and guidance provided on how this should be done.

Contrary to previous reports that the adoption of data management systems was limited (DoH 2008; Donaldson *et al*. 2014), participants stated that this was not a concern. Instead, frustration was directed at the use of multiple systems which are time-consuming because of their inability to connect with each other. Furthermore, the systems are not capable of presenting either the large number of KPI's or patient experience data in an easily accessible format. If, as anticipated, the growth of 'big data' related to healthcare continues, systems that are more effective in collating data from different sources will be required. The cost implications must also be considered, especially if the data is being provided solely for socio-demographic reasons.

8.3.2 Implications and recommendations for policy

Although this study did not set out to explore KPI use at a macro level, national factors were identified which impact on the use of KPI's in practice. An absence of collaborative working with clinical nurses and midwives resulted in many frustrations when mandated KPI's were subsequently applied to clinical practice. This lack of inclusion not only relates to discussion at Department of Health level but also to local council, regulatory and commissioning levels. The use of data mainly for monitoring purposes, and the lack of collaboration and feedback, contributes to the development of a culture focused on assurance rather than improvement. This in turn drives a focus on what is measured but does a disservice to that which is not, as was identified in examples of emergency department care.

Due to the absence of a strategic overview of KPI's in use there is little knowledge of the volume of data that is collected by nurses and midwives, and no focused examination and dissemination of good practice. There is a need for policy makers to agree what a KPI is in the field of healthcare, based on the criteria identified in this study. Working from an agreed KPI definition, there needs to be a national review of all the data collected for the

purpose of externally reported KPI's. At a minimum, analysis should distinguish data collected for statistical purposes, from that which contributes to KPI's used by nurses and midwives for improvement purposes. It should also analyse to whom the data is reported, frequency of reporting, cost incurred, provision of feedback and the usefulness of this for improvement purposes. Information collected solely for national and international statistical purposes should be classified as such, and efforts made to streamline and reduce the burden of data collection and reporting, with more efficient systems employed.

Specifically, there needs to be a reassessment of the use of KPI's for the provision of assurance and inter-organisational comparison if this competes with their use to improve practice. The number of KPI's used at this level should be limited to the few that are important and can be designed to meet most practice settings without adaptation, including person-centred KPI's. This would allow organisations and services to focus on the areas identified as requiring improvement, which, along with the flexibility to stop or reduce KPI use (as appropriate), will result in minimal burden to clinical practice.

Nurses and midwives are disillusioned with KPI's, even if they do understand them, when they cannot see their relevance to practice; all they see is the collection of data for its own sake. Greater inclusion of nurses and midwives in decisions about KPI use is required at national, regulatory and council level. This should include clinical practitioners as well as managers. Nursing and midwifery KPI's should be tested in the areas in which they are to be used prior to regional and organisational implementation, and local consultation undertaken. For KPI's that have been in use for a long time, such as measuring the incidence of pressure ulcers, the challenge for national bodies and organisations is how to combine and sustain those used for monitoring with those used to drive improvement, without creating burden. National conversations are required to agree a small set of KPI's that can be used for comparison. Timely feedback and greater openness and transparency should be provided by all bodies that collect KPI data. Feedback should include shared learning and examples of what aided and hindered success.

8.3.3 Implications and recommendations for research

This study identifies a deficit of research on the provision of care to people in their own homes, which has an impact on the development of KPI's for this area of practice due to

the weak evidence-base. Further research is required to inform the development of KPI's for this area of practice. The focus of KPI development and selection remains on the acute sector and consequently the contribution of nurses in other areas of practice remains unrecognised. Further research is needed to ascertain if the small number of KPI's identified in the children's, mental health and intellectual disability fields of nursing is deliberate based on the requirement for a small number of important KPI's, or due to a lack of focus in these areas. If it is the former, is there any learning that would benefit KPI use? The research would therefore also need to quantify the extent to which data collection negatively impacts on care delivery, and explore how this can be improved.

There remain challenges in obtaining the views of service users. Organisations frequently rely on patient surveys for collecting patient experience data. To increase effectiveness, a toolkit of measures should be developed to fit the diverse needs of practice and patients including those thus far excluded from presenting their views. Further work is required to explore how to utilise the growth in information technology to facilitate greater staff and service user participation in, and feedback from, quality improvement. Focused attention is also required on the identification of KPI's designed to measure the psychosocial aspects of the patient experience.

Key policy documents have highlighted KPI use as a means of driving improvement. However, many challenges have been identified in translating the KPI evidence-base into practice. A deficit has been recognised in the application of theories to implement KPI's, and this warrants further exploration. While simple changes to practice can be achieved with little effort, those requiring more substantial and sustainable change require theoretical underpinning. The PARIHS framework (Kitson *et al*. 1998) or revised i-PARIHS framework (Harvey and Kitson 2016), with their focus on facilitation, have been presented as a possible means to support the transfer of KPI evidence into practice. Testing the use of the i-PARIHS framework (Harvey and Kitson 2016), as a means to support the implementation of KPI's into practice for quality improvement, is required.

8.4 CONCLUSION

To date, little attention had been given to how KPI's influence decisions made about practice within organisations, and the evidence that linked the use of KPI's with quality

improvement was weak. This study addresses these gaps: its results show that nurses and midwives are motivated to use KPI's when they are understood and can be seen to be effective in improving the situation for their patients. Promoting this person-centred approach to achieve better patient outcomes through the full adoption of KPI's requires nurses and midwives to be included in decisions made about their practice in a supportive culture that values positive inter-professional relationships and fosters practice improvement (McCormack and McCance 2017). This research suggests that the effective use of KPI's by nurses and midwives to improve practice is related to a culture that demonstrates appreciation of their contribution through uniform inclusion in decision-making, leading to shared goals and practical support for innovation.

Findings suggest that the participation of clinical nurses and midwives in KPI implementation is generally limited to data collection. Furthermore, the current process of KPI reporting is technical, linear and instructive. This limits the ability of nurses and midwives to understand KPI's, which in turn hampers their ability to initiate analysis and trigger actions for improvement. Lack of ownership and engagement further compounds the problem. When feedback is available it is usually presented on dashboards or display boards which may be disregarded by busy clinical nurses and midwives.

The evidence presented in this thesis points to the need for leadership at all levels of an organisation if KPI's are to be used successfully to drive safety, quality and compassion in care (DoH 2008). It also points to the need for a shift in the balance of power, giving more control to the service user (Berwick 2015). Findings suggest that multiple methods of engagement are required. It is argued that more must be done to ensure a cultural change from department level through to clinical level. The key to unlocking the required change potentially lies in collective leadership that is inclusive of all organisations and bodies that work in partnership within healthcare, including service users (West *et al*. 2014, p.2) and each nurse and midwife.

A total of 106 users of KPI's contributed to this study. Despite everyone being asked to provide examples of how the use of KPI's influenced their practice, findings demonstrate that there is little translation of KPI evidence into quality improvement. Perceptions vary regarding the need for theory when undertaking knowledge transfer. There are arguments for (Eccles *et al*. 2005; Estabrooks *et al*. 2006) and against (Oxman *et al*. 2005), as well

as arguments for a tailored approach based on a continuum according to the practice context (Rycroft-Malone 2007). The use of a framework which allows for a continuum of facilitation is considered most appropriate. This is based on the range of practice improvements identified, from aligning the provision of tea with breakfast delivery to the (more complex) adoption of a multi-professional approach to reduce post-partum haemorrhage rates. However, the study has identified both a lack of KPI understanding by nurses and midwives and a consequent limited improvement in quality. When considered in relation to the theory of implementation science this demonstrates that, without some form of active process, the evidence underpinning, and produced by, KPI's will remain purely data for data's sake.

Based on the theories reviewed, it is suggested that facilitation is the most beneficial method of increasing knowledge and achieving the transfer of evidence into practice. The i-PARIHS framework (Harvey and Kitson 2016), with its attention to successful implementation through the facilitation of practice-based innovation, has resonance with the findings and is proposed as a framework worthy of consideration. Facilitation need not be formal (Harvey and Kitson 2016), as the findings show that clinical managers who have been suitably prepared with leadership and facilitation skills are best placed to support and reinforce KPI use and quality improvement on an ongoing basis.

In conclusion, the core of this study has focused on the use of KPI's to influence practice within the confines of nursing and midwifery practice in primary and secondary care. The KPI process has therefore been examined within the broader national contexts and from the perspective of the nurses and midwives tasked with the use of KPI's and engaged in improving the care they deliver. The findings presented are especially important given the significant investment that has been made in healthcare – and thus the need to demonstrate its effectiveness (DoH 2017) – and the focus on measurement and improvement in government policy and white papers (DoH 2014b; Frankel *et al*. 2017). Their importance is also supported by the assertion of Van DeVelde-Coke *et al.* (2012) that it is policy makers and the public who are driving the momentum for quality measurement rather than academic enquiry. Research is therefore important to ensure that this momentum is guided by a strong evidence-base rather than hearsay and random opinions.

This study has successfully addressed its objectives and answered the research question. Factors influencing the use of KPI's in practice have been identified. There is a clear need for some means of engaging nurses and midwives in the use of KPI's to improve their practice, and facilitation is argued to be the active ingredient to achieve this. However, to support this action, nurses and midwives in national bodies and organisations must work collectively to refine KPI use beyond that described in the literature. The study also utilised a mixed method approach to ensure a rigorous and credible process which pragmatically met the research objectives.

In conclusion, this study has contributed to the knowledge-base on the use of KPI's, thus offering the potential to optimise their future effectiveness in practice.

References

Abrahamson, K., Miech, E., Wood Davila, H., Mueller, C., Cooke, V. and Arling, G. (2015) Pay-for-performance policy and data-driven decision making within nursing homes: a qualitative study. *British Medical Journal Quality and Safety,* 24(5), 311-317.

Aiken, L.H., Buchan, J., Ball, J. and Rafferty, A.M. (2008) Transformative impact of Magnet designation: England case. *Journal of Clinical Nursing*, 17(24), 3330-3337.

Aiken, L.H., Sloane, D.M., Bruyneel, L., Van den Heede, K., Griffiths, P., Busse, R., Diomidous, M., Kinnunen, J., Kózka, M., Lesaffre, E., McHugh, M.D., Moreno-Casbas, M.T., Rafferty, A.M., Schwendimann, R., Scott, P.A., Tishelman, C., van Achterberg, T. and Sermeus, W. (2014) Nurse staffing and education and hospital mortality in nine European countries: a retrospective observational study. *The Lancet*, 383, 1824-1830.

American Educational Research Association, American Psychological Association, and National Council on Measurement in Education. (1985) *Standards for educational and psychological testing.* Washington: AERA Publications Sales.

American Nurses Association. (1995) *Nursing care report card for acute care.* Washington: American Nurses Publishing.

Anderson, R.A., Corazzini, K., Porter, K., Daily, K., McDaniel, R.R. and Colón-Emeric, C. (2012) CONNECT for quality: protocol of a cluster randomised controlled trail to improve fall prevention in nursing homes. *Implementation Science*. Available at: www.implementationscience.com/content/7/1/11 [Accessed 11 November 2014].

Andrew, S. and Halcomb, E.J. (2009) *Mixed methods research for nursing and the health sciences*. Oxford: Blackwell Publishing.

Anseel, F., Lievens, F., Schollaert, E. and Choragwicka, B. (2010) Response rates in organizational science, 1995–2008: a meta-analytic review and guidelines for survey researchers. *Journal of Business and Psychology,* 25, 335-349.

Arah, O.A., Klazinga, N.S., Delnoij, D.M., ten Asbroek, A.H. and Custers, T. (2003) Conceptual frameworks for health systems performance: a quest for effectiveness, quality and improvement. *International Journal of Quality Health Care,* 15(5), 377-398.

Argyris, C. (1960) *Understanding organisational behaviour*. London: Travistock.

Artley, W. and Stroh, S. (2001) *The performance-based management handbook Vol 2*. California: Performance-Based Management Special Interest Group.

Attree, M. (2001) A study of the criteria used by healthcare professionals, managers and patients to represent and evaluate quality care. *Journal of Nursing Management*, 9, 67-78.

Australian Institute of Health and Welfare. (2008) A set of performance indicators across the health and aged care system. Available at: http://www.aihw.gov.au/WorkArea/DownloadAsset.aspx?id=6442471955 [Accessed 18/11/14].

Avinash, K. (2010) *Occam's razor*. Available at: http://www.kaushik.net/avinash/web-analytics-101-definitions-goals-metrics-kpis-dimensions-targets/ [Accessed 6 July 2015].

Baker, G., Denis, J.L., Pomey, M. and Macintosh-Murray, A. (2010) *Effective governance for quality and patient safety in Canadian healthcare organizations*. Ottawa: Canadian Health Services Research Foundation.

Bamberger, M. (2015) Innovations in the use of mixed methods in real-world evaluation. *Journal of Development Effectiveness*, 7(3), 317-326.

Bandura, A. (1977) Self-efficacy: toward a unifying theory of behavioural change. *Psychology Review*, 84(2),191-215.

Barnsley, J., Berta, W., Cockerill, R., MacPhail, J. and Vayda, E. (2005) Identifying performance indicators for family practice. *Canadian Family Physician*, 51, 700-701.

Baruch, Y. and Holtom, B.C. (2008) Survey response rate levels and trends in organizational research. *Human Relations,* 61(8), 1139-1160.

Bauer, M.S., Damschroder, L., Hagedorn, H., Smith, J. and Kilbourne, A.M. (2015) An introduction to implementation science for the non-specialist. *BMC Psychology,* 3, 32.

Bawden, D. (2006) Users, user studies and human information behaviour: a three decade perspective on Tom Wilson's 'On user studies and information needs', *Journal of Documentation*, 62(6), 671-679.

Bazeley, P. (2003) Teaching mixed methods. *Qualitative Research Journal*, 3, 117-126.

Belfroid, E., Hautvast, J.L., Hilbink, M., Timen, A. and Hulscher, M.E. (2015) Selection of key recommendations for quality indicators describing good quality outbreak response. *BMC Infectious Diseases,* 15, 166.

Benibo, B.R. (1997) A technology-contingency framework for a productivity-oriented workforce diversity. *SAM Advanced Management Journal,* Spring, 62(2).

Berwick, D. (2015) *Key note address*. London: International Forum on Quality and Safety in Healthcare. Available at: http://livestream.com/IFQSH/ForumLIVE [Accessed 15 September 2017].

Berwick, D., Loehrer, S. and Gunther-Murphy, C. (2017) Breaking the rules for better care. *American Medical Association*, 317(21), 2161-2164.

Berwick, D.M., Nolan, T.W. and Whittington, J. (2008) The Triple Aim: care, health, and cost. *Health Affairs*, 27(3), 759-769.

Blaikie, N. (2004) Positivism. *In*: Lewis-Beck, M., Bryman, A. and Liao, T. eds. *Encyclopedia of social science research methods*. Thousand Oaks: Sage Publications, 837-839.

Blozik, E., Nothacker, M., Bunk, T., Szecsenyi, J., Ollenschläger, G. and Scherer, M. (2012) Simultaneous development of guidelines and quality indicators - how do guideline groups act?: A worldwide survey. *International Journal of Health Care Quality Assurance*, 25(8), 712-729.

Boomer, C. and McCormack, B. (2008) Where are we now? A process for evaluating the context of care in practice development. *Practice Development in Health Care*. 7(3), 123-133.

Boomer, C.A. and McCormack, B. (2010) Creating the conditions for growth: a collaborative practice development programme for clinical nurse leaders. *Journal of Nursing Management*, 18, 633-644.

Botti, M., Kent, B., Bucknall, T., Duke, M., Johnstone, M., Considine, J., Redley, B., Hunter, S., de Steiger, R., Holcombe, M. Cohen, E. (2014) Development of a management algorithm for post-operative pain (MAPP) after total knee and total hip replacement: study rationale and design. *Implementation Science*, 9, 110.

Bovens, M. (2005) Public accountability. *In*: Ferlie, E., Lynn, L.E. and Pollitt, C. eds. *The Oxford handbook of public management.* Oxford: Oxford University Press, 182-208.

Braun, V. and Clarke, V. (2006) Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101.

Braun, V. and Clarke, V. (2013) *Successful qualitative research*. London: SAGE Publications.

Brown, D. and McCormack, B.G. (2011) Developing the practice context to enable more effective pain management with older people: an action research approach. *Implementation Science*, 6,9.

Brown, D. and McCormack, B. (2016) Exploring psychological safety as a component of facilitation within the Promoting Action on Research Implementation in Health Services framework. *Journal of Clinical Nursing*, 25, 2921-2932.

Bryman, A. (2007) Barriers to integrating quantitative and qualitative research. *Journal of Mixed Methods Research*, 1(1), 8-22.

Bryman, A. (2012) *Social research methods*. 4th ed. Oxford: Oxford University Press.

Bubb, S. (2014) *Winterbourne View – time for change*. London: The Stationery Office.

Burrell, G. and Morgan, G. (2005) *Sociological paradigms and organisational analysis*. Burlington: Ashgate Publishing.

Burston, S., Chaboyer, W. and Gillespie, B. (2013) Nurse-sensitive indicators suitable to reflect nursing care quality: a review and discussion of issues. *Journal of Clinical Nursing,* 23, 1785-1795.

Caldwell, D.F. and O'Reilly, C.A. (2003) The determinants of team-based innovation in organizations. The role of social influence. *Small Group Research*, 34(4), 497-517.

Campbell, S.M., Braspenning, J., Hutchinson, A. and Marshall, M. (2002) Research methods used in developing and applying quality indicators in primary care. *Quality and Safety in Health Care*, 11, 358-364.

Centre for Patient Leadership and FPM. (2013) *Bring it on - 40 ways to support patient leadership. A paper produced for NHS Midlands and East.* Available at: http://engagementcycle.org/wp-content/uploads/2013/03/Bring-it-on-40-ways-to-support-Patient-Leadership-FINAL-V-APRIL-2013.pdf. [Accessed 13 July 2017].

Chrusch, C.A., Martin, C.M. and The Quality Improvement in Critical Care Project. (2016) Quality improvement in critical care: selection and development of quality indicators. *Canadian Respiratory Journal*. Available at: http://dx.doi.org/10.1155/2016/2516765 [Accessed 3 October 2017].

Cohen, D, and Crabtree, B. (2006) Semi-structured interviews. *Qualitative research guidelines project.* Available at: http://www.qualres.org/HomeSemi-3629.html [Accessed 25 September 2017].

Cokins, G. (2013) *The balanced scorecard, strategy maps and dashboards: why are they different?* Available at: www.cgma.org/magazine/features/pages/20138186.aspx [Accessed 25 November 2014].

Cook, C., Heath, F. and Thompson, R.L. (2000) A meta-analysis of response rates in web-or internet-based surveys. *Educational and Psychological Measurement,* 60, 821-836.

Coomarasamy, A. and Khan, K.S. (2004) What is the evidence that postgraduate teaching in evidence based medicine changes anything? A systematic review. *British Medical Journal,* 329(7473), 1017.

Corbin Dwyer, S. and Buckle, J.L. (2009) The space between: on being an insider-outsider in qualitative research. *International Journal of Qualitative Methods,* 8(1), 54-63.

Costello, K. (1995) Managed care – the corporatization of healthcare. *California Nurse,* 91(6), 10-11.

Creswell, J. (2014) *Research design: qualitative, quantitative and mixed method approaches.* 4th ed. Thousand Oaks: SAGE.

Creswell, J.W., Clark, V.L., Gutmann, M.L. and Hanson, W.E. (2003) Advanced mixed methods research designs. *In*: Tashakkori, A. and Teddlie, C. eds. *Handbook of mixed methods in social & behavioral research.* Thousand Oaks: SAGE, 209-239.

Creswell, J. and Plano Clark, V. (2007) *Designing and conducting mixed methods research.* Thousand Oakes*;* SAGE Publications.

Creswell, J. and Plano Clark, V. (2011) *Designing and conducting mixed methods research*. 2nd ed. Thousand Oaks; SAGE Publications.

Critical Appraisal Skills Programme. (2014) *CASP qualitative checklist*. Available at: http://www.casp-uk.net/checklists [Accessed 12 January 2016].

Crotty, M. (1998) *The foundations of social research*. London: Sage Publications.

Curtis, E. and Drennan, J. (2013) *Quantitative health research: issues and methods*. Berkshire: Open University Press.

Curtis, K., Fry, M., Shaban, R.Z. and Cinsidine, J. (2016) Translating research findings into clinical nursing practice. *Journal of Clinical Nursing*, 26, 862-872.

Curtright, J., Stolp-Smith, S.C. and Edell, E.S. (2000) Strategic performance management: development of a performance measurement system at the Mayo Clinic. *Journal of Healthcare Management*, 45, 1.

Cutcliffe, J. and McKenna, H. (2002) When do we know what we know? Considering the truth of research findings and the craft of qualitative research. *International Journal of Nursing Studies*, 39, 611-618.

Cycyota, C.S. and Harrison, D.A. (2006) What (not) to expect when surveying executives. *Organizational Research Methods*, 9, 133-160.

Dancet, E.A.F., D'Hooghe, T.M., Spiessens, C., Sermeus, W., De Neubourg, D., Karel, N., Kremer, J.A.M. and Nelen, W.L.D.M. (2013) Quality indicators for all dimensions of infertility care quality: consensus between professionals and patients. *Human Reproduction*, 28(6), 1584-1597.

Davies, H.T.O., Powell, A.E. and Nutley, S.M. (2015) Mobilising knowledge to improve UK health care: learning from other countries and other sectors - a multimethod mapping study. *Health Services and Delivery Research*, 3(27).

Dearnley, C. (2005) A reflection on the use of semi-structured interviews. *Nurse Researcher*, 13, 19-29.

Deming, E. (1992) *Out of the crisis*. Cambridge, Massachusetts: Massachusetts Institute of Technology.

Denzin, N.K. (2010) Moments, mixed methods, and paradigm dialogs. *Qualitative Inquiry*, 16(6), 419-427.

Denzin, N.K. (2012) Triangulation 2.0. *Journal of Mixed Methods Research*, 6, 80-88.

Denzin, N.K. and Lincoln, Y.S. (2011) *The SAGE handbook of qualitative research*. 4th ed. Thousand Oaks; SAGE Publications.

Denzin, N.K. and Lincoln, Y.S. (2013) *The landscape of qualitative research.* 4th ed. California: SAGE Publications.

Department of Health. (1998) *A first class service. Quality in the new NHS*. London: Her Majesty's Stationery Office.

Department of Health. (1999) *Making a difference – strengthening the nursing, midwifery and health visiting contribution to health and healthcare*. London: Her Majesty's Stationery Office.

Department of Health. (2004) *Quality and outcomes framework*. Dublin: An Roinn Sláinte.

Department of Health. (2008) *High quality care for all – NHS next stage review final report.* (CM 7432). London: The Stationery Office.

Department of Health. (2014a) *The NHS outcomes framework 2015/16*. London: Her Majesty's Stationery Office.

Department of Health. (2014b) *NHS five year forward view*. London: Her Majesty's Stationery Office.

Department of Health. (2016) *Health and wellbeing 2026 – delivering together*. Available at: www.health-ni.gov.uk [Accessed 17 November 2017].

Department of Health. (2017) *Framework for national performance indicators for nursing and midwifery*. Dublin: An Roinn Sláinte.

Department of Health and Children. (1998) *Working for health and well-being' strategy statement 1998 – 2001*. Dublin: An Roinn Sláinte.

Department of Health, Social Services and Public Safety. (2011) *Quality 2020*: *a 10 year strategy to protect and improve quality in health and social care in Northern Ireland.* Belfast: Department of Health Social Services and Public Safety.

Dewey, J. (1917) The need for a recovery of philosophy. *In*: Talisse, R.B. and Aikin, S.F. (2011) eds. *The pragmatism reader: from Pierce through the present*. New Jersey: Princeton University, 109-140.

Dewey, J. (1929) *Experience and nature*. London: George Allen and Unwin.

Dewey, J. (2008a) Reconstruction in philosophy. *In*: Boydston, J. and Ross, R. eds. *The middle works of John Dewey, 1899-1924* (Vol.12). Carbondale: Southern Illinois University Press, 77-202.

Dewey, J. (2008b) Experience and nature. *In*: Boydston, J. and Hook, S. eds. *The later works of John Dewey, 1925-1953* (Vol.1). Carbondale: Southern Illinois University Press, 1-437.

Dewey, J. (2008c) The public and its problems. *In*: Boydston, J. and Gouinlock, J. eds. *The later works of John Dewey, 1925-1953* (Vol. 2). Carbondale: Southern Illinois University Press, 235-372.

Dickerson, S.S., Sackett, K., Jones, J.M. and Brewer, C. (2001) Guidelines for evaluating tools for clinical decision making. *Nurse Education*, 26(5), 215-220.

Dillman, D.A. (2002) *Procedures for conducting government-sponsored establishment surveys: comparisons of the total design method (TDM), a traditional cost compensation model, and tailored design*. Unpublished paper. Pullman: Washington State University.

Dixon-Woods, M., McNicol, S. and Martin, G. (2012) Ten challenges in improving quality in healthcare: lessons from the Health Foundation's programme evaluations and relevant literature. *British Medical Journal Quality and Safety*, 21, 876-884.

Donabedian, A. (1988) The quality of care: how can it be assessed? Journal of the American Medical Association, 260, 1743-1748. Reprinted in: *Archives of Pathology and Laboratory Medicine* (1997), 121(11).

Donabedian, A. (2005) Evaluating the quality of medical care. *The Milbank Quarterly*, 83(4), 691-729.

Donaldson, L., Rutter, P. and Henderson, M. (2014). *The right time, the right place*. Belfast: Department of Health Social Services and Public Safety. Available at: http://www.dhsspsni.gov.uk/donaldsonreport270115.pdf [Accessed 5 February 2015].

Donaldson, N.E., Rutledge, D.N, and Ashley, J. (2004) Outcomes of adoption: measuring evidence uptake by individuals and organizations. *Worldviews on Evidence-Based Nursing*, 1(1), 41-51.

Doran, D.M. (2003) Preface. *In*: Doran, D.M. ed. *Nursing outcomes: the state of the science*. Sudbury: Jones and Bartlett, p.vii.

Doran, D.M. and Pringle, D. (2011) Patient outcomes as an accountability. *In*: Doran, D.M. ed. *Nursing outcomes: the state of the science*. Sudbury: Jones and Bartlett, 1-23.

Douglas, K. (2010) Digital dashboard and staffing: a perfect match. *American Nurse Today* 5, 52-54.

Drake, K. (2013) Finding your way…data to decision. *Nursing Management,* 44(9), 40-44.

Drake, P. and Heath, L. (2011) *Practitioner researcher at doctoral level*. London: Routledge.

Dubois, C., D'Amour, D., Pomey, M., Girard, F. and Brault, I. (2013) Conceptualizing performance of nursing care as a prerequisite for better measurement: a systematic and interpretive review. *BioMed Central Nursing,* 12:7 Available at: www.biomedcentral.com/1472-6955/12/7 [Accessed 15 October 2014].

Duclay, E., Hardouin, J.B., Sébille, V., Anthoine, E. and Moret, L. (2015) Exploring the impact of staff absenteeism on patient satisfaction using routine databases in a university hospital. *Journal of Nursing Management*, 23, 833-841.

Dunckley, M., Aspinal, F., Addington-Hall, J.M., Hughes, R. and Higginson, I.J. (2005) A research study to identify facilitators and barriers to outcome measure implementation. *International Journal of Palliative Nursing*, 11(5), 219-225.

Dwamena, F., Holmes-Rovner, M., Gaulden, C.M., Jorgenson, S., Sadigh, G., Sikorskii, A., Lewin, S., Smith, R.C., Coffey, J., Olomu, A. and Beasley, M. (2012) Interventions for providers to promote a person-centred approach in clinical consultations (Review). *Cochrane Database of Systematic Reviews*. The Cochrane Collaboration: John Wiley and Sons.

Eccles, M., Grimshaw, J., Walker, A., Johnston, M. and Pitts, N. (2005) Changing the behaviour of healthcare professionals: the use of theory in promoting the uptake of research findings. *Journal of Clinical Epidemiology*, 58, 107-112.

Eccles, M.P. and Mittman, B.S. (2006) Welcome to implementation science. *Implementation Science*, 1, 1.

Estabrooks, C.A., Rutakumwa, W., O'Leary, K.A., Profetto-McGrath, J., Milner, M., Levers, M. J. and Scott-Findlay, S. (2005) Sources of practice knowledge among nurses. *Qualitative Health Research*, 15(4), 460-476.

Estabrooks, C.A., Thompson, D.S., Lovely, J.J. and Hofmeyer, A. (2006) A guide to knowledge translation theory. *The Journal of Continuing Education in the Health Professions*, 26(1), 25-36.

Fenton-O'Creevy, M. (1996) *Employee involvement and the middle manager*. Unpublished dissertation. London: London Business School.

Fetters, M.D., Curry, L.A. and Creswell, J.W. (2013) Achieving integration in mixed methods designs – principles and practices. *Health Services Research*, 48(6), 2134-2156.

Field, R. (2017) John Dewey (1859-1952). *The Internet Encyclopaedia of Philosophy*, Available at: http://www.iep.utm.edu/dewey/ [Accessed 9 January 2018].

Flood, B. and Henman, M.C. (2014) Building quality indicators for medication use in people aging with intellectual disabilities and behavioural disorders. *International Journal of Developmental Disabilities*, 0, 1-17.

Fossum, M., Alexander, G.L., Göransson, K.E., Ehnfors, M. and Ehrenberg, A. (2011) Registered nurses' thinking strategies on malnutrition and pressure ulcers in nursing homes: a scenario-based think-aloud study. *Journal of Clinical Nursing*, 20, 2425-2435.

Foulkes, M. (2011) Nursing metrics: measuring quality in patient care. *Nursing Standard*, 25(42), 40-45.

Francis, R. (2013) *Report of the Mid Staffordshire NHS Foundation Trust public inquiry*. London: Her Majesty's Stationery Office.

Frankel, A., Haraden, C., Federico, F. and Lenoci-Edwards, J. (2017) *A framework for safe, reliable, and effective care.* White Paper. Cambridge, Massachusetts: Institute for Healthcare Improvement and Safe and Reliable Healthcare. Available at:

https://www.medischevervolgopleidingen.nl/sites/default/files/paragraph_files/a_framework_for_safe_reliable_and_effective_care.pdf [Accessed 2 February 2018].

Gage, N.L. (1989) The paradigm wars and their aftermath: a "historical" sketch of research on teaching since 1989. *Educational Researcher*, 18(7), 4-10.

Gagliardi, A.R., Lemieux-Charles, L., Brown, A.D., Sullivan, T. and Goel, V. (2008) Barriers to patient involvement in health service planning and evaluation: an exploratory study. *Patient Education and Counseling*, 70, 234-241.

Galliers, R.D. (1991) Choosing appropriate information systems research approaches: a revised taxonomy. *In:* Nissen, H.E., Klein, H.K. and Hirschheim, R. eds, *Information systems research: contemporary approaches and emergent traditions.* North Holland: Elsevier Science Publishers, 327-345.

Gerrish, K. and Lacey, A. (2010) *The research process in nursing*. Chichester: Wiley-Blackwell.

Glasper, A. (2016) Fifteen-minute home visits and the quest to improve care. *British Journal of Nursing*, 25(4), 224-225.

Goddard, M. and Smith, P.C. (2001) Performance measurement in the new NHS. *Health Policy Matters*, 3, 1-8.

Gokenbach, V. and Drenkard, K. (2011) The outcomes of Magnet environments and nursing staff engagement: a case study. *Nursing Clinics of North America*, 46(1), 89-105.

Gold, S.K.T., Abelson, J. and Charles, C.A. (2005) From rhetoric to reality: including patient voices in supportive cancer care planning. *Health Expectations*, 8(3), 195-209.

Gorard, S. (2010) Research design, as independent of methods. *In*: Teddlie, C. and Tashakkori, A. eds. *Handbook of mixed methods.* Los Angeles: SAGE Publications, 237-252.

Graham-Dickerson, P., Houser, J., Thomas, E., Casper, C., ErkenBrack, L., Wenzel, M. and Siegrist, M. (2013) The value of staff nurse involvement in decision making. *Journal of Nursing Administration*, 43(5), 286-292.

Gravel, K., Légaré, F. and Graham, I.D. (2006) Barriers and facilitators to implementing shared decision-making in clinical practice: a systematic review of health professionals' perceptions. *Implementation Science*, 1, 16.

Greenhalgh, T., Howick, J. and Maskrey, N. (2014) Evidence based medicine: a movement in crisis? *British Medical Journal*, 348, 3725.

Greenhalgh, T., Robert, G., MacFarlane, F., Bate, P. and Kyriakidou, O. (2004) Diffusion of innovations in service organisations: systematic review and recommendations. *The Millbank Quarterly*, 82(4), 581-629.

Greenhalgh, T., Robert, G., MacFarlane, F., Bate, P., Kyriakidou, O. and Peacock, R. (2005) Storylines of research in diffusion of innovation: a meta-narrative approach to systematic review. *Social Science and Medicine*, 61, 417-430.

Griffiths, P., Jones, S., Maben, J. and Murrells, T. (2008) *State of the art metrics for nursing: a rapid appraisal.* London: King's College London.

Griffiths, P. and Maben, J. (2009) The metrics of care. *Nursing Standard*, 23(20), 62-63.

Grimshaw, J.M., Eccles, M.P., Lavis, J.N., Hill, S.J. and Squires, J.E. (2012) Knowledge translation of research findings. *Implementation Science*, 7, 50.

Groff-Paris, L. and Terhaar, M. (2010) Using Maslow's pyramid and the national database of nursing quality indicators to attain a healthier work environment. *Online Journal of Issues in Nursing*, 16(1), 6.

Grol, R. (2001) Improving the quality of medical care. Building bridges among professional pride, payer profit and patient satisfaction. *Journal of American Medical Association*, 286, 2578-2585.

Guba, E.G. (1981) Criteria for assessing the trustworthiness of naturalistic inquiries. *Educational Communication and Technology Journal*, 29, 75-91.

Guba, E.G. (1990) *The paradigm dialog*. California: SAGE Publications.

Guba, E.G. and Lincoln, Y.S. (1981) *Effective evaluation: improving the usefulness of evaluation results through responsive and naturalistic approaches*. San Francisco: Jossey-Bass.

Guba, E.G. and Lincoln, Y.S. (1982). Epistemological and methodological bases of naturalistic inquiry. *Educational Communication and Technology*, 30(4), 233-252.

Guba, E.G. and Lincoln, Y.S. (1989) *Fourth generation evaluation*. Newbury Park: SAGE Publications.

Guetterman, T.C. (2015) Descriptions of sampling practices within five approaches to qualitative research in education and the health sciences. *Forum: Qualitative Social Research*, 16(2), 25.

Guise, V., Chambers, M., Valimaki, M., and Makkonen, P. (2010) A mixed-mode approach to data collection: combining web and paper questionnaires to examine nurses' attitudes to mental illness. *Journal of Advanced Nursing*, 66(7), 1623-1632.

Hahtela, N., Paavilainen, E., McCormack, B., Slater, P., Helminen, M. and Suominen, T. (2014) Influence of workplace culture on nursing-sensitive nurse outcomes in municipal primary health care. *Journal of Nursing Management*, 23(7), 931-939.

Halcomb, E. and Hickman, L. (2015) Mixed methods research. *Nursing Standard*, 29(32), 41-47.

Hall, B. and Howard, K. (2008) A synergistic approach: conducting mixed methods research with typological and systemic design considerations. *Journal of Mixed Methods Research*, 2(3), 248-269.

Hall, J.N. (2013) Pragmatism, evidence, and mixed methods evaluation. *In*: Mertens, D.M. and Hesse-Biber, S.N. eds. *Mixed methods and credibility of evidence in evaluation.* New York: Wiley, 15-26.

Ham, C., Berwick, D. and Dixon, J. (2016) *Improving quality in the English NHS. A strategy for action*. London: The King's Fund.

Hammersley, M. (1992) The paradigm wars: reports from the front. *British Journal of Sociology of Education,* 13(1), 131-143.

Harper, M. and Cole, P. (2012) Member checking: can benefits be gained similar to group therapy? *The Qualitative Report*, 17(2), 510-517.

Harte, B., Hixson, E., Proctor, A., LaRochelle, D. and Auron, M. (2012) Actionable quality improvement: synergizing the EMR and BI. *Journal of Hospital Medicine*, 7, 131-132.

Harvey, G. and Kitson, A. (2015) *Implementing evidence-based practice in healthcare. A facilitation guide.* Oxford: Routledge.

Harvey, G. and Kitson, A. (2016) PARIHS revisited: from heuristic to integrated framework for the successful implementation of knowledge into practice. *Implementation Science*, 11, 33.

Harvey, G., Loftus-Hills, A., Rycroft-Malone, J., Titchen, A., Kitson, A., McCormack, B. and Seers, K. (2002) Getting evidence into practice: the role and function of facilitation. *Journal of Advanced Nursing*, 37(6), 577-88.

Hasson, F., McKenna, H. and Keeney, S. (2015) Surveys. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 255-266.

Hatheway, R. (2016) The real difference between metrics and KPIs. *Linkedin*. July 8. Available at: https://www.linkedin.com/pulse/real-difference-between-metrics-kpis-richard-hatheway [Accessed 13 October 2017].

Hauser, J. and Katz, G. (1998) Metrics: you are what you measure! *European Management Journal*, 16(5), 517-528.

Health and Social Care Board. (2014) *Safety and quality of services a priority in financial plans.* Available at: http://www.hscboard.hscni.net/1742/ [Accessed 5 October 2017].

Health Information and Quality Authority. (2010) *Guidance on developing key performance indicators and minimum data sets to monitor healthcare quality*. Dublin: Health Information and Quality Authority.

Health Information and Quality Authority. (2013) *Guidance on developing key performance indicators and minimum data sets to monitor healthcare quality*. Version 1.1. Dublin: Health Information and Quality Authority.

Health Information and Quality Authority. (2015) *Report of the investigation into the safety, quality and standards of services provided by the Health Service Executive to patients in the Midland Regional Hospital, Portlaoise.* Dublin: Health Information and Quality Authority.

Health Service Executive. (2015) *Guiding framework for the implementation of nursing and midwifery quality care-metrics.* Dublin: Health Service Executive.

Helfrich, C.D., Damschroder, L.J., Hagedorn, H.J., Daggett, G.S., Sahay, A., Ritchie, M., Damush, T., Guihan, M., Ullrich, P.M. and Stetler, C.B. (2010) A critical synthesis of literature on the promoting action on research implementation in health services (PARIHS) framework. *Implementation Science*, 5, 82.

Heslop, L. (2014) Australian direct care nurses can make cost savings and improve health-care quality if they have access to meaningful data. *International Journal of Nursing Practice*, 20, 337-338.

Heslop, P., Blair, P.S., Fleming, P., Hoghton, M., Marriott, A. and Russ, L. (2014) The confidential inquiry into premature deaths of people with intellectual disabilities in the UK: a population-based study. *The Lancet*, 383, 889-895.

Heslop, L. and Lu, S. (2014) Nursing-sensitive indicators: a concept analysis. *Journal of Advanced Nursing*, 70(11), 2469-2482.

Heyvaert, M., Hannes, K., Maes, B. and Onghena, P. (2013) Critical appraisal of mixed methods studies. *Journal of Mixed Methods Research*, 7(4), 302-327.

Hickman, L.A. (2009) John Dewey: his life and work. *In*: Hickman, L.A., Neubert, S. and Reich, K. eds. *John Dewey between pragmatism and constructivism*. New York: Fordham University Press, 3-18.

Hillen, J.B., Vitry, A. and Caughey, G.E. (2015) Evaluating medication-related quality of care in residential aged care: a systematic review. *SpringerPlus*, 4, 220. Available at: https://doi.org/10.1186/s40064-015-0984-9 [Accessed 3 September 2017].

Hitchcock, J.H., Onwuegbuzie, A.J. and Khoshaim, H.B. (2015) Examining the consequential validity of standardised examinations via public perceptions: a review of mixed methods survey design considerations. *International Journal of Multiple Research Approaches*, 9(1), 24-39.

Hodder, M. and Marples, S. (2005) Strategic leadership for healthcare management. *In*: Jasper, M. and Jumaa, M. eds. *Effective healthcare leadership*. Oxford: Blackwell Publishing, 48-57.

Hoi, E. (2008) The importance of being measurable: quantifying nursing quality. *Journal of Student Nursing Research*, 1(2), 3.
Available at: http://repository.upenn.edu/josnr/vol1/iss2/3 [Accessed 12 July 2015].

Holmes, B.J., Finegood, D.T., Riley, B.L. and Best, A. (2012) Systems thinking in dissemination and implementation research. *In*: Brownson, R.C., Colditz, G.A. and

Proctor, E.K. eds. *Dissemination and implementation research in health*. New York: Oxford University Press, 192-212.

Honey, P. and Mumford, A. (1992) *The manual of learning styles*. London: Peter Honey Associates.

Houser, J. (2008) *Nursing research. Reading using and creating evidence*. London: Jones and Bartlett Publishers.

Houser, J., ErkenBrack, L., Handberry, L., Ricker, F. and Stroup, L. (2012) Involving nurses in decisions: improving both nurse and patient outcomes. *Journal of Nursing Administration*, 42(7/8), 375-382.

Hsieh, H. and Shannon, S.E. (2005) Three approaches to qualitative content analysis. *Qualitative Health Research*, 15(9), 1277-1288.

Humphrey-Murtoa, S., Varpiob, L., Gonsalvesa, C. and Wooda, T.J. (2017) Using consensus group methods such as Delphi and Nominal Group in medical education research. *Medical Teacher*, 39(1), 14-19.

Hunt, K. and Lathlean, J. (2015) Sampling. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 173-184.

Idvall, E., Rooke, L. and Hamrin, E. (1997) Quality indicators in clinical nursing: a review of the literature. *Journal of Advanced Nursing*, 25, 6-17.

Ihantola, E and Kihn, L. (2011) Threats to validity and reliability in mixed methods accounting research. *Qualitative Research in Accounting and Management*, 8(1), 39-58.

Institute of Medicine. (1990) Health, health care and quality of care. *In*: Lohr, K.N. ed. *Medicare: a strategy for quality assurance*. 1st ed. Washington: National Academy Press, 21.

Implementation Science. (2017) *About implementation science*. Available at: https://implementationscience.biomedcentral.com/about [Accessed 24/8/17].

Institute of Medicine. (2001) *Closing the quality chasm: a new health system for the 21st century*. Washington: National Academies Press. Available at: http://www.nap.edu/openbook.php?record_id=10027&page=R1 [Accessed 17 February 2015].

International Council of Nurses. (2003) *Ethical guidelines for nursing research*. Geneva: International Council of Nurses.

Iowa Model Collaborative. (2017) Iowa model of evidence-based practice: revisions and validation. *Worldviews on Evidence-Based Nursing*, 14(3), 175-182.

James, W. (2000) *Pragmatism and other writings*. London: Penguin Books.

Jasper, M. and Jumaa, M. (2005) *Effective healthcare leadership*. Oxford: Blackwell Publishing.

Jeffs, L., Sidani, S., Rose, D., Espin, S., Smith, O., Martin, K., Byer, C., Fu, K. and Ferris, E. (2013) Using theory and evidence to drive measurement of patient, nurse and organizational outcomes of professional nursing practice. *International Journal of Nursing Practice*, 19, 141-148.

Johnson, D.R. and Hoopes, D.G. (2003) Managerial cognition, sunk costs, and the evolution of industry structure. *Strategic Management Journal*, 24, 1057-1068.

Johnson, K., Hallsey, D., Meredith, R.L. and Warden, E. (2006) A nurse-driven system for improving patient quality outcomes. *Journal of Nursing Care Quality*, 21(2), 168-175.

Johnson, M. and Long, T. (2015) Research ethics. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley-Blackwell, 31-41.

Johnson, R.B. and Onwuegbuzie, A. (2004) Mixed methods research: a research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.

Johnson, R.B., Stefurak, T., de Waal, C. and Hildebrand, D.L. (2017) Understanding the philosophical positions of classical and neopragmatists for mixed methods research. *Cologne Journal of Sociology and Social Psychology*, 69(2), 63-86.

Joint Commission on Accreditation of Healthcare and Organisations. (1993) *The measurement mandate: on the road to performance improvement in healthcare.* Illinois: JCAHO.

Jones, L., Pomeroy, L., Robert, G., Burnett, S., Anderson, J.E. and Fulop, N.J. (2017) How do hospital boards govern for quality improvement? A mixed methods study of 15 organisations in England. *British Medical Journal Quality and Safety*, 0, 1-9. Available at: http://qualitysafety.bmj.com/content/early/2017/07/07/bmjqs-2016-006433 [Accessed 3 September 2017].

Jones, M. and Rattray, J. (2015) Questionnaire design. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 413-425.

Judah, B. (2017) *Successful innovation will not arrive through disruption*. Available at: https://www.linkedin.com/pulse/successful-innovation-arrive-through-disruption-ben-judah?trk=eml-email_feed_ecosystem_digest_01-recommended_articles-7-Unknown&midToken=AQF2OsfcYr9HXw&fromEmail=fromEmail&ut=1MfYjV6_H7HDU1 [Accessed 7 September 2017].

Kaplan, R.S. and Norton, D.P. (1992) The balanced scorecard – measures that drive performance. *Harvard Business Review*, 70(1), 71-79.

Kavanagh, K.T., Cimiotti, J.P., Abusalem, S. and Coty, M. (2012) Moving healthcare quality forward with nurse-sensitive value-based purchasing. *Journal of Nursing Scholarship*, 44(4), 385-395.

Kelly, D., Lankshear, A. and Jones, A. (2015) Resilient leadership in a time of crisis: experiences of executive directors of nursing in the wake of the Francis Report. *Report to the GNC Trust*. Cardiff: Cardiff University.

Kent, B. (2015) Practitioner research. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 319-331.

Keogh, B. (2013) *Review into the quality of care and treatment provided by 14 hospital trusts in England: overview report*. Available at: https://www.nhs.uk/nhsengland/bruce-keogh-review/documents/outcomes/keogh-review-final-report.pdf [Accessed 15 September 2017].

Kinchen, E. (2015) Development of a quantitative measure of holistic nursing care. *Journal of Holistic Nursing American Holistic Nurses Association*, 33(3), 238-246.

King's Fund. (2008) *Background to the Next Stage Review*. London: The Stationery Office.

Kirkley, C., Bamford, C., Poole, M., Arksey, H., Hughes, J. and Bond, J. (2011) The impact of organisational culture on the delivery of person-centred care in services providing respite care and short breaks for people with dementia. *Health & Social Care in the Community*, 19(4), 438-48.

Kitson, A. and Harvey, G. (2016) Methods to succeed in effective knowledge translation in clinical practice. *Journal of Nursing Scholarship*, 48(3), 294-302.

Kitson, A., Harvey, G. and McCormack, B. (1998) Enabling the implementation of evidence-based practice: a conceptual framework. *Quality Health Care*, 7, 149-158.

Kitson, A., Rycroft-Malone, J., Harvey, G., McCormack, B., Seers, K. and Titchen, A. (2008) Evaluating the successful implementation of evidence into practice using the PARIHS framework: theoretical and practical challenges. *Implementation Science*, 3, 1.

Koch, T. (1992) A review of nursing quality assurance. *Journal of Advanced Nursing*, 17, 785-794.

Koch, T. (2006) Establishing rigour in qualitative research: the decision trail. *Journal of Advanced Nursing*, 53(1), 91-103.

Kontio, E., Lundgren-Laine, H., Kontio, J., Korvenranta, H. and Salantera, S. (2011) Critical incidents and important information in the care processes of patients with cardiac symptoms. *Journal of Nursing Management*, 19, 209-217.

Kötter, T., Schaefer, F.A., Scherer, M. and Blozik, E. (2013) Involving patients in quality indicator development – a systematic review. *Patient Preference and Adherence*, 7, 259-268.

Kouzes, J. and Posner, B. (2002) *The leadership challenge*. 3rd ed. San Francisco: Jossey-Bass.

Krugman, M.E. and Sanders, C.L. (2016) Implementing a nurse manager profile to improve unit performance. *Journal of Nursing Administration*, 46(6), 345-351.

Kuhn, T.S. (1962) *The structure of scientific revolutions*. Chicago: University of Chicago Press.

Kuhn, T.S. (1977) *The essential tension: selected studies in scientific tradition and change.* Chicago: University of Chicago Press.

Kurtzman, E.T. and Jennings, B.M. (2008a) Trends in transparency: nursing performance measurement and reporting. *Journal of Nursing Administration*, 38(7/8), 349-354.

Kurtzman, E.T. and Jennings, B.M. (2008b) Capturing the imagination of nurse executives in tracking the quality of nursing care. *Journal of Nursing Administration*, 32(3), 235-246.

Lacey, A. (2015) The research process. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 15-29.

Lang, N. (2008) The promise of simultaneous transformation of practice and research with the use of clinical information systems. *Nursing Outlook*, 56, 232-236.

Langemo, D.K., Anderson, J. and Volden, C. (2002) Nursing quality outcome indicators, the North Dakota Study. *Journal of Nursing Administration*, 32, 98-105.

Langley, G., Nolan, K. and Nolan, T. (1994) The foundation of improvement. *Quality Progress*, 27(6), 81-86.

Lathlean, J. (2015) Qualitative analysis. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 471-487.

Lee, I. and Wang, H. (2014) Preliminary development of humanistic care indicators for residents in nursing homes: a Delphi technique. *Asian Nursing Research*, 8, 75-81.

Lee, J.L., Chang, B.L., Pearson, M.L., Kahn, K.L. and Rubenstein, L.V. (1999) Does what nurses do affect clinical outcomes for hospitalised patients? A review of the literature. *Health Service Research*, 34(5), 1011-1032.

Leung, L. (2015) Validity, reliability, and generalizability in qualitative research. *Journal of Family Medicine and Primary Care*, 4(3), 324-327.

Lincoln, Y.S. and Guba, E.G. (1985) *Naturalistic inquiry*. Newbury Park: Sage Publications.

Lincoln, Y.S., Lynham, S.A. and Guba, E.G. (2011) Paradigmatic controversies, contradictions and emerging confluences. Revisited. *In*: Denzin, N.K. and Lincoln, Y.S. 4th ed. *The SAGE handbook of qualitative research*. Thousand Oaks: SAGE Publications.

Maas, M.L. and Delaney, C. (2004) Nursing process outcome linkage research: issues, current status, and health policy implications. *Medical Care*, 42(2), 40-48.

Maben, J. (2008) The art of caring: invisible and subordinated? A response to Juliet Corbin: "Is caring a lost art in nursing?" *International Journal of Nursing Studies,* 45, 335-338.

Maben, J., Morrow, E., Ball, J., Robert, G. and Griffiths, P. (2012) *High quality care metrics for nursing*. London: National Nursing Research Unit, King's College.

Magee, B. (2010) *The story of philosophy*. London: Dorling Kindersley Limited.

Magnello, M.E. (2010) The passionate statistician. *In:* Nelson, S. and Rafferty, A.M. eds. *Notes on Nightingale: the influence and legacy of a nursing icon.* New York: Cornell University, 115-129.

Mainz, J. (2003) Defining and classifying clinical indicators for quality improvement. *International Journal of Quality Health Care,* 13, 469-474.

Manley, K., McCormack, B. and Wilson, V. (2008) *International practice development in nursing and healthcare*. Oxford: Blackwell Publishing.

Mannarelli, T. (2006) Accounting for leadership. Charismatic, transformational leadership through reflection and self-awareness. *Accountancy Ireland,* 38(6), 46-48.

Mannion, R., Davies, H. and Marshall, M. (2005) Cultural characteristics of 'high' and 'low' performing hospitals. *Journal of Health Organization and Management,* 19(6), 431-439.

Mannion, R., Freeman, T., Millar, R. and Davies, H. (2016) Effective board governance of safe care: a cross-sectional examination of the breadth and depth of relationships through local case studies and national surveys. *NIHR Health Services and Delivery Research,* 4(4), 1-200.

March, J.G. and Simon, H.A. (1958) *Organizations.* Oxford: Wiley.

Marr, B. (2014) Caution: when KPIs turn to poison. *Linkedin*. 24 March. Available at: https://www.linkedin.com/pulse/20140324073422-64875646-caution-when-kpis-turn-to-poison [Accessed 21 October 2014].

Marshall, M. (2014) Bridging the ivory towers and the swampy lowlands; increasing the impact of health services research on quality improvement. *International Journal for Quality in Health Care*, 26(1), 1-5.

Martin, G.P., McKee, L. and Dixon-Woods, M. (2015) Beyond metrics? Utilizing 'soft intelligence' for healthcare quality and safety. *Social Science and Medicine*, 142, 19-26.

Martin, L., Nelson, E., Rakover, J. and Chase, A. (2016) *Whole system measures 2.0: a compass for health system leaders.* Cambridge, Massachusetts: Institute for Healthcare Improvement.

Maslow, A.H. (1943) A theory of human motivation. *Psychological Review* 50, 70-396.

Mathers, N., Fox, N. and Hunn, A. (2009) *Surveys and Questionnaires*. The National Institute for Health Research. Available at: https://www.rds-yh.nihr.ac.uk/wp-content/uploads/2013/05/12_Surveys_and_Questionnaires_Revision_2009.pdf [Accessed 27 September 2017].

Mattke, S., Reilly, K., Martinez-Vidal, E., McLean, B. and Gifford, D. (2003) Reporting quality of nursing home care to consumers: the Maryland experience. *International Journal of Quality in Healthcare*, 15(2), 169-177.

Maxwell, J.A. (2013) *Qualitative research design: an interactive approach*. 3rd ed. London: SAGE Publications.

Maxwell, J.A. (2015) Expanding the history and range of mixed methods research. *Journal of Mixed Methods Research,* 10(1), 12-27.

Maxwell, J.A. and Loomis, D.M. (2003) Mixed methods design: an alternative approach. *In:* Tashakkori, A. and Teddlie, C. eds. *Handbook of mixed methods in social and behavioural research.* Thousand Oaks: SAGE Publications, 241-271.

Maxwell, S.E. and Delaney, H.D. (2004) *Designing experiments and analysing data*. 2nd ed. New York: Psychology Press.

May, C. and Finch, T. (2009) Implementing, embedding, and integrating practices: an outline of normalization process theory. *Sociology*, 43(3), 535-554.

McCance, T., Hastings, J. and Dowler, H. (2015) Evaluating the use of key performance indicators to evidence the patient experience. *Journal of Clinical Nursing*, 24, 3084-3094.

McCance, T., Telford, L., Wilson, J., MacLeod, O. and Dowd, A. (2012) Identifying key performance indicators for nursing and midwifery care using a consensus approach. *Journal of Clinical Nursing,* 21, 1145-1154.

McCance, T., Wilson, V. and Kornman, K. (2016) Paediatric international nursing study: using person-centred key performance indicators to benchmark children's services. *Journal of Clinical Nursing,* 25, 2018-2027.

McCormack, B., Kitson, A., Harvey, G., Rycroft-Malone, J., Titchen, A. and Seers, K. (2002) Getting evidence into practice: the meaning of 'context'. *Journal of Advanced Nursing,* 38(1), 94-104.

McCormack, B. and McCance, T. (2017) *Person-centred practice in nursing and health care- theory and practice.* 2nd ed. Oxford: John Wiley and Sons.

McIntosh, C. (2011) *Cambridge Essential English Dictionary*. 2nd ed. Cambridge: Cambridge University Press.

McKim, C.A. (2015) The value of mixed methods research: a mixed methods study. *Journal of Mixed Methods Research,* 11(2), 202-222.

Merriam-Webster Incorporated. (2015) *Merriam-Webster Dictionary*. Available at: http://www.merriam-webster.com/dictionary/metric [Accessed 3 November 2015].

Mertens, D.M. (2003) Mixed methods and the politics of human research: the transformative emancipatory perspective. *In:* Tashakkori, A. and Teddlie, C. eds. *Handbook of mixed methods in social and behavioural research*. Thousand Oaks: SAGE, 135-166.

Mertens, D.M. (2010) *Research and evaluation in education and psychology: Integrating diversity with quantitative, qualitative, and mixed methods*. 3rd ed. Thousand Oaks: Sage Publications.

Mertens, D.M., Bazeley, P., Bowleg, L., Fielding, N., Maxwell, J., Molina-Azorin, J.F. and Niglas, K. (2016) Expanding thinking through a kaleidoscopic look into the future: implications of the mixed methods international research association's task force report on the future of mixed methods. *Journal of Mixed Methods Research*, 1-7.

Mertens, D.M. and Hesse-Biber, S. (2013) Mixed methods and credibility of evidence in evaluation. *In*: Mertens, D.M. and Hesse-Biber, S. eds. *Mixed methods and credibility of evidence in evaluation: new directions for evaluation*, 138, 5-13.

Miles, M. and Huberman, M. (1994) *Qualitative data analysis*. 2nd ed. London: SAGE Publications.

Mitchell, P.H. (2008) Defining patient safety and quality care. *In:* Hughes, R.G. ed. *Patient safety and quality: an evidence-based handbook for nurses* Rockville: Agency for Healthcare Research and Quality, chapter one.

Mitchell, S.A., Fisher, C.A., Hastings, C.E., Silverman, L.B. and Wallen, G.R. (2010) A thematic analysis of theoretical models for translating science in nursing: mapping the field. *Nursing Outlook*, 58, 287-300.

Moen, R. (2009) *Foundation and history of the PDSA Cycle*. Available at: https://deming.org/uploads/paper/PDSA_History_Ron_Moen.pdf [Accessed 17 September 2017].

Moen, R., Nolan, T., and Provost, L, (1991) *Improving quality through planned experimentation.* New York: McGraw-Hill.

Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G. and the PRISMA Group. (2009) Preferred reporting items for systematic reviews and meta-analyses: the PRISMA statement. *Annals of Internal Medicine,* 151(4), 264-269.

Montalvo, I. (2007) The national database of nursing quality indicators. *Online Journal of Issues in Nursing*, 12(3). Available at: http://www.nursingworld.org/MainMenuCategories/ANAMarketplace/ANAPeriodicals/OJIN/TableofContents/Volume122007/No3Sept07/NursingQualityIndicators.html?css=print [Accessed 30 December 2014].

Moran-Ellis, J., Alexander, V.D., Cronin, A., Dickinson, M., Fielding, J., Sleney, J. and Thomas, H. (2006) Triangulation and integration: processes, claims and implications. *Qualitative Research*, 6(1), 45-59.

Morgan, D.L. (2007) Paradigms lost and pragmatism regained. Methodological implications of combining qualitative and quantitative methods. *Journal of Mixed Methods Research*, 1(1), 48-76.

Morgan, D.L. (2009) Pragmatism as a paradigm for social research. *Qualitative Inquiry*, 20(10), 1-9.

Morgan, D.L. (2014) *Integrating qualitative and quantitative methods: a pragmatic approach*. London: SAGE Publications.

Morse, J.M. (2003) Principles of mixed methods and multimethod research design. *In*: Tashakkori, A. and Teddlie, C. eds. *Handbook of mixed methods in social and behavioural research*. London: SAGE, 189-208.

Morse, J.M. (2010) Procedures and practice of mixed methods design: maintaining control, rigor and complexity. *In*: Tashakkori, A. and Teddlie, C. eds. *SAGE* h*andbook of mixed methods in social and behavioural research*. 2nd ed. London: SAGE Publications, 339-352.

Morse, J.M., Barrett, M., Mayan, M., Olson, K. and Spiers, J. (2002) Verification strategies for establishing reliability and validity in qualitative research. *International Journal of Qualitative Methods*,1(2), 13-22.

Morse, J.M. and Niehaus, L. (2009). *Mixed methods design: principles and procedures*. Walnut Creek: Left Coast Press.

Mortensen, D. (2008) *The difference between a KPI and a metric*. Available at: http://www.slideshare.net/dennis.mortensen/the-difference-between-a-kpi-and-a-metric [Accessed 25 June 2015].

Moss, P.A. (1994) Can there be validity without reliability? *Educational Researcher*, 23, 5-12.

Moss Kanter, R. (1999) The enduring skills of change leaders. *Leader to Leader*, 13, 15-22.

Moule, P. and Goodman, M. (2014) *Nursing research: an introduction*. 2nd ed. London: Sage Publications.

National Advisory Group on the Safety of Patients in England. (2013) *A promise to learn – a commitment to act: improving the safety of patients in England.* London: Department of Health.

National Health Service. (2014) *The forward view into action: planning for 2015/16.* Available at: http://www.england.nhs.uk/wp-content/uploads/2014/12/forward-view-plning.pdf. [Accessed 5 January 2015].

National Health Service England. (2014) *Five year forward view*. London: Department of Health.

National Health Service England. (2016) *Leading change, adding value*. London: Department of Health.

National Health Service Group. (2014) *The NHS outcomes framework 2015/16*. London: The Stationery Office.

National Health Service National Services Scotland. (2012) *Quality indicators for critical care in Scotland* Version 2.0. Edinburgh: ISD Scotland Publications.

National Health Service Quality Improvement Scotland. (2005) *The impact of nursing on patient clinical outcomes.* Available at: http://www.healthcareimprovementscotland.org/previous_resources/indicators/clinical_indicatiors_-_nursing.aspx [Accessed 20 October 2014].

National Health Service Scotland. (2015) *NHS Scotland 2015-16 local delivery plan guidance*. Edinburgh: The Scottish Government.

National Institute for Health and Care Excellence. (2014) *Indicators process guide*. Manchester: NICE.

National Quality Forum. (2003) *A comprehensive framework for hospital care performance evaluation: a consensus report*. Washington: National Quality Forum.

Needleman, J., Kurtzman, E.T. and Kizer, K.W. (2007) Performance measurement of nursing care: State of the science and the current consensus. *Medical Care Research and Review,* 64, 10S- 43S.

Newhouse, R.P. (2007) Accelerating improvement: implications of the IOM report for nurse executives. *Journal of Nursing Administration*, 37(6), 264-268.

Nicklin, W. and Barton, M. (2007) CCHSA accreditation: a change catalyst toward healthier work environments. *Healthcare Papers*, 7, 58-63.

Nilsen, P. (2015) Making sense of implementation theories, models and frameworks. *Implementation Science*, 10, 53.

Noh, H.K. and Lee, E. (2014) Relationships among NANDA-1 diagnoses, nursing outcomes classification, and nursing interventions classification by nursing students for patients in medical-surgical units in Korea. *International Journal of Nursing Knowledge*, 26(1), 43-51.

Northcott, H. and Harvey, M. (2012) Public perceptions of key performance indicators of healthcare in Alberta, Canada. *International Journal for Quality in Health Care*, 24(3), 214-223.

O'Cathain, A. (2013) Mixed methods involving qualitative research. *In*: Bourgeault, I., Dingwall, R. and De Vries, R. eds. *The SAGE handbook of qualitative methods health research.* London: SAGE Publications, 575-589.

O'Cathain, A., Murphy, E. and Nicholl, J. (2007a) Why, and how, mixed methods research is undertaken in health services research in England: a mixed methods study. *BMC Health Services Research*, 7, 85.

O'Cathain, A., Murphy, E. and Nicholl, J. (2007b) Integration and publications as indicators of ''Yield'' from mixed methods studies. *Journal of Mixed Methods Research*, 1(2), 147-163.

O'Cathain, A., Murphy, E. and Nicholl, J. (2010) Three techniques for integrating data in mixed methods studies. *British Medical Journal*, 341, 1147-1150.

Olsen, D. (2011) When being good means looking bad. *American Journal of Nursing*, 111(10), 63-65.

Onwuegbuzie, A.J. and Johnson, R.B. (2006) The Validity Issue in Mixed Research. *Research in the Schools*, 13(1), 48-63.

Onwuegbuzie, A.J., Johnson, R.B. and Collins, K.M.T. (2003) Call for mixed analysis: a philosophical framework for combining qualitative and quantitative approaches. *International Journal of Multiple Research Approaches*, 3, 114-139.

Ossege, C. (2012) Accountability – are we better off without it? *Public Management Review*, 14(5), 585-607.

Ousey, K. and White, R. (2009) Editorial: Tissue viability and the quality accounts agenda: quality indicators and metrics. *British Journal of Nursing*, 18, 20.

Oxman, A.D., Fretheim, A. and Flottorp, S. (2005) The OFF theory of research utilization. *Journal of Clinical Epidemiology*, 58(2), 113-116.

Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N. and Hoagwood, K. (2015) Purposeful sampling for qualitative data collection and analysis in mixed method implementation research. *Administration and Policy in Mental Health*, 42(5), 533-544.

Pallant, J. (2013) *SPSS survival manual*. 5th ed. Berkshire: McGraw Hill, Open University Press.

Pansiri, J. (2005) Pragmatism: a methodological approach to researching strategic alliances in tourism. *Tourism and Hospitality Planning and Development*, 2(3), 191-206.

Paquet, M., Courcey, F., Lavoie-Tremblay, M., Gagnon, S. and Maillet, S. (2013) Psychosocial work environment and predictors of quality of care indicators in one Canadian health centre. *Worldviews on Evidence-Based Nursing*, 10(2), 82-94.

Parahoo, K. (2014) *Nursing research: principles, process and issues*. 3rd ed. Hampshire: Palgrave Macmillan.

Parlour, R. Slater, P. and Breslin, E. (2013) *Health Service Executive North West nursing and midwifery metrics evaluation research report*. Dublin: Health Service Executive.

Parmelli, E., Flodgren, G., Beyer, F., Baillie, N., Schaafsma, M.E. and Eccles, M.P. (2011) The effectiveness of strategies to change organisational culture to improve healthcare performance: a systematic review. *Implementation Science*, 6, 33.

Parson, T. (1960) *Structure and process in modern societies*. New York: Free Press.

Patton, M.Q. (2002) *Qualitative evaluation and research methods*. 3rd ed. London: SAGE Publications.

Patton, M.Q. (2015) *Qualitative evaluation and research methods*. 4th ed. London: SAGE Publications.

Pazargadi, M., Tafreshi, M.Z., Abedsaeedi, Z., Majd, H.A. and Lankshear, A.J. (2008) Proposing indicators for the development of nursing care quality in Iran. *International Nursing Review*, 55, 399-406.

Pearson, A. (2003) Key performance indicators for nursing. *International Journal of Nursing Practice*, 9, 337.

Perrow, C. (1967) A framework for the comparative analysis of organizations. *American Sociological Review*, 32(2), 194-208.

Persenius, M., Hall-Lord, M, Wilde-Larsson, B. and Carlsson, E. (2015) Clinical nursing leaders' perceptions of nutritional quality indicators in Swedish stroke wards: a national survey. *Journal of Nursing Management*, 23, 705-715.

Peters, M.A. (2014) The shapes of theory in education. *Educational Philosophy and Theory*, 46(12), 1315-1319.

Petersen, R. (2012) *12 Experts define key performance indicators*. Available at: http://barnraisersllc.com/2012/02/experts-define-key-performance-indicators/ [Accessed 5 February 2015].

Philips, D.C. and Burbules, N.C. (2000) *Postpoitivism and educational research*. Lanham: Rowman and Littlefield.

Phillips, C.D., Hawes, C., Lieberman, T. and Koren, M.J. (2007) Where should momma go? Current nursing home performance measurement strategies and a less ambitious approach. *BMC Health Services Research,* 7, 93.

Planas-Campmany, C., Quinto´, L., Icart-Isern, M., Calvo, E. and Ordi, J. (2015) Nursing contribution to the achievement of prioritized objectives in primary health care: a cross-sectional study. *European Journal of Public Health*, 26(1), 53-59.

Polanyi, M. (1962) *Personal knowledge: towards a post-critical philosophy*. Chicago: University of Chicago Press.

Polit, D.F. and Tatano Beck, C.T. (2014) *Essentials of nursing research: appraising evidence for nursing practice*. 8th ed. Philadelphia: Lippincott, Williams and Wilkins.

Popper, K. (2002a) *The logic of scientific discovery*. London: Routledge Classics.

Popper, K. (2002b) *The open society and its enemies: Volume 1: The spell of Plato*. London: Routledge Classics.

Powell, A.A., White, K.M., Partin, M.R., Halek, K., Christianson, J.B., Neil, B., Hysong, S.J., Zarling, E.J. and Bloomfield, H.E. (2012) Unintended consequences of implementing a national performance measurement system into local practice. *Journal of General Internal Medicine,* 27(4), 405-412.

Powell, T.C. (2001) Competitive advantage: logical and philosophical considerations. *Strategic Management Journal*, 22(9), 875-888.

Primary Care Workforce Commission. (2015) *The future of primary care, creating teams for tomorrow*. London: Health Education England.

Qualtrics Development Company. (2015) *Qualtrics*. Utah: Qualtrics. Available at: http://www.qualtrics.com [Accessed 12 June 2016].

Rambur, B., Vallett, C., Cohen, J. and Mattuck Tarule, J. (2013) Metric-driven harm: an exploration of unintended consequences of performance measurement. *Applied Nursing Research,* 26, 269-272.

Reed, J. (2010) Practitioner research. *In*: Gerrish, K. and Lacey, A. eds. *The research process in nursing.* 6th ed. Oxford: Wiley-Blackwell, 271-283.

Regulation and Quality Improvement Authority (2016) *Review of quality improvement systems and processes.* Available at: www.rqia.org.uk [Accessed 11/6/17].

Riazi, M.A. (2016) Innovative mixed-methods research: moving beyond design technicalities to epistemological and methodological realizations. *Applied Linguistics*, 37(1), 33-49.

Richards, K. (2003) *Qualitative inquiry in TESOL*. Basingstoke: Palgrave Macmillan.

Riege, A.M. (2003) Validity and reliability tests in case study research: a literature review with "hands-on" applications for each research phase. *Qualitative Market Research,* 6, 75-86.

Rogers, E.M. (2003) *Diffusion of Innovations*. 5th ed. New York: Free Press.

Rolfe, G. (2006) Validity, trustworthiness and rigour: quality and the idea of qualitative research. *Journal of Advanced Nursing,* 53, 304-310.

Rolfe, G., Freshwater, D. and Jasper, M. (2001) *Critical reflection for nursing and the helping professionals: a user's guide*. Hampshire. Palgrave MacMillan.

Rosati, R.J., Marrren, J.M., Davin, D.M. and Morgan, C.J. (2009) The linkage between employee and patient satisfaction in home healthcare. *Journal for Healthcare Quality*, 31(2), 44-53.

Royal College of Nursing. (2009) *Measuring for quality in health and social care. An RCN position statement*. Available at: https://www.rcn.org.uk/__data/assets/pdf_file/0004/248872/003535.pdf [Accessed 6 January 2015].

Royal College of Nursing. (2011a) *Making nursing visible; valuing our contribution to high quality patient-centred care.* Available at: http://www.rcn.org.uk/ehealth. [Accessed 6 January 2015].

Royal College of Nursing. (2011b) *Nursing dashboards – measuring quality.* London: Royal College of Nursing.

Royal College of Nursing Scotland. (2016) *Measuring success: principles for a new approach to improving health and wellbeing in Scotland*. Edinburgh: Royal College of Nursing.

Rutherford, M.A. (2008) Standardized nursing language: what does it mean for nursing practice? *Online Journal of Issues in Nursing*, 13, 1.

Rycroft-Malone, J. (2007) Theory and knowledge translation: setting some coordinates. *Nursing Research*, 56(4), 78-85.

Rycroft-Malone, J. (2008) Evidence-informed practice: from individual to context. *Journal of Nursing Management*, 16(4), 404-408.

Rycroft-Malone, J. and Bucknall, T. (2010) *Models and frameworks for implementing evidence-based practice: linking evidence to action.* West Sussex: Wiley-Blackwell.

Rycroft-Malone, J., Kitson, A.L., Harvey, G., McCormack, B., Seers, K., Titchen, A. and Estabrooks, C. (2002) Ingredients for change: revisiting a conceptual framework. *Quality and Safety in Health Care*, 11, 174-180.

Rycroft-Malone, J., Seers, K., Chandler, J., Hawkes, C.A., Crichton, N., Allen, C., Bullock, I. and Strunin, L. (2013) The role of evidence, context, and facilitation in an implementation trial: implications for the development of the PARIHS framework. *Implementation Science*, 38, 28.

Rycroft-Malone, J., Seers, K., Titchen, A., Harvey, G., Kitson, A.L., and McCormack, B. (2004) What counts as evidence in evidence-based practice. *Journal of Advanced Nursing*, 47(1), 81-90.

Sackett, D.L., Rosenberg, W.M.C., Gray, J.A.M., Haynes, B. and Richardson, W.S. (1996) Evidence based medicine. What it is and what it isn't. *British Medical Journal*, 312, 71-2.

Sandelowski, M. (1986) The problem of rigor in qualitative research. *Advances in Nursing Science*, 8, 27.

Sandelowski, M. (1993) Rigor or rigor mortis: the problem of rigor in qualitative research revisited. *Advances in Nursing Sciences*, 16(2), 1-8.

Sandelowski, M. (1995) Triangles and crystals: on the geometry of qualitative research. *Research in Nursing and Health*, 18, 569-574.

Sandelowski, M. (2000) Combining qualitative and quantitative sampling, data collection, and analysis techniques in mixed-method studies. *Research in Nursing and Health*, 23, 246-255.

Sandström, B., Borglin, G., Nilsson, R. and Willman, A. (2011) Promoting the implementation of evidence-based practice: a literature review focusing on the role of nursing leadership. *Worldviews on Evidence-Based Nursing*, 8(4), 212-223.

Schaffer, M.A., Sandau, K.E. and Diedrick, L. (2012) Evidence-based practice models for organisational change: overview and practical applications. *Journal of Advanced Nursing*, 69(5), 1197-1209.

Schein, E.H. (2010) *Organizational culture and leadership*. 4th ed. San Francisco: Jossey-Bass.

Senge, P. (1990) *The fifth discipline: the art and practice of the learning organisation*. London: Century Business.

Shah, S. (2012) KPI definition and context. *In*: Peterson, R. *12 Experts define key performance indicators*. Available at: http://barnraisersllc.com/2012/02/experts-define-key-performance-indicators/ [Accessed 5 February 2015].

Shah, S.R. and Al-Bargi, A. (2013) Research paradigms: researchers' worldviews, theoretical frameworks and study designs. *Arab World English Journal*, 4(4), 252-264.

Shelton, D., Reagan, L., Weiskopf, C., Panosky, D., Nicholson, M. and Diaz, D. (2015) Baseline indicators and implementation strategies in a statewide correctional nurse competencies program: mid-year report. *Journal of Continuing Education in Nursing*, 46(10), 455-461.

Shenton, A.K. (2004) Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information*, 22(2), 63-75.

Shield, T., Campbell, S., Rogers, A., Worrall, A., Chew-Graham, C. and Gask, L. (2003) Quality indicators for primary care mental health services. *Quality and Safety in Health Care*, 12, 100-106.

Smith, A.P. (2007) Nurse-sensitive care measures: a platform for value and vision. *Nursing Economics*, 25(1), 43-46.

Smith, P. (1995) On the unintended consequences of publishing performance data in the public sector. *International Journal of Public Administration*, 18(2-3), 277-310.

Snell, J. (2015) Invest in nurses to pull NHS out of crisis, alliance urges MPs. *Nursing Standard*, 29(20), 14-15.

Snowden, M. (2015) Use of diaries in research. *Nursing Standard*, 29(44), 36-41.

Sorensen, R. and Iedelma, R. (2010) Accounting for health-care outcomes: implications for intensive care unit practice and performance. *Health Services Management Research*, 23, 97-102.

Sousa, K.H., Weiss, J., Welton, J., Reeder, B. and Ozkaynak, M. (2015) The Colorado collaborative for nursing research: nurses shaping nursing's future. *Nursing Outlook*, 63(2), 204-210.

Speed, S. and Luker, K. (2006) Getting a visit: how district nurses and general practitioners 'organise' each other in primary care. *Sociology of Health and Illness*, 28(7), 883-902.

Stalpers, D., De Vos, M., Van Der Linden, D., Kaljouw, M. and Schuurmans, M. (2017) Barriers and carriers: a multicentre survey of nurses' barriers and facilitators to monitoring of nurse-sensitive outcomes in intensive care units. *Nursing Open*, 4(3), 149-156.

St Pierre, J. (2006) Staff nurses' use of report card data for quality improvement: first steps. *Journal of Nursing Care Quality*, 21(1), 8-14.

Stricker, K.H., Kimberger, O., Schmidlin, K., Zwahlen, M., Mohr, U. and Rothen, H.U. (2009) Family satisfaction in the intensive care unit: what makes the difference? *Intensive Care Medicine*, 35, 2051-2059.

Tabak, R.G., Khoong, E.C., Chambers, D.A. and Brownson, R.C. (2012) Bridging research and practice: models for dissemination and implementation research. *American Journal of Preventative Medicine*, 43(3), 337-350.

Talisse, R.B. and Aiken, S.F. (2011) *The pragmatism reader: from Pierce through the present*. New Jersey: Princeton University Press.

Talungchit, P., Liabsuetrakul, T. and Lindmark, G. (2013) Development and assessment of indicators for quality care in severe preeclampsia/eclampsia and postpartum haemorrhage. *Journal for Healthcare Quality*, 35(5), 22-34.

Tappen, R.M., Weiss, S.A. and Whitehead, D.K. (2006) *Essentials of nursing leadership and management.* 4th ed. Philadelphia: F.A. Davis Company.

Tashakkori, A. and Creswell, J. (2007) The new era of mixed methods. *Journal of Mixed Methods Research*, 1(1), 3-7.

Tashakkori, A. and Teddlie, C. (1998) *Mixed methodology: combining qualitative and quantitative approaches.* Thousand Oaks: SAGE.

Tashakkori, A. and Teddlie, C. (2010) *Handbook of mixed methods in social & behavioural science.* 2nd ed. Thousand Oaks, SAGE Publications.

Taylor, S.J., Bogdan, R., and DeVault, M.L. (2016) *Introduction to qualitative research methods: a guidebook and resource.* Hoboken: John Wiley and Sons.

Teddlie, C. and Tashakkori, A. (2009) *Foundations of mixed methods research*. Thousand Oaks: Sage Publications.

Teddlie, C., and Tashakkori, A. (2011) Mixed methods research: contemporary issues in an emerging field. *In:* Denzin, N. and Lincoln, Y. eds. *The Sage handbook of qualitative research*. 4th ed. London: SAGE, 285-299.

The Bristol Royal Infirmary Inquiry. (2001) *The report of the public inquiry into children's heart surgery at the Bristol Royal Infirmary 1984-1995: learning from Bristol*. London: The Stationery Office.

The Health Foundation. (2013) *Quality improvement made simple. What everyone should know about health care quality improvement*. London: The Health Foundation.

The KPI Institute. (2013) *The KPI compendium*. Melbourne: The KPI Institute.

Thompson, C. (2001) JAN forum: clinical decision making in nursing: theoretical perspectives and their relevance to practice – a response to Jean Harbinson. *Journal of Advance Nursing*, 35, 134-137.

Timmins, F. (2015) Surveys and questionnaires in nursing research. *Nursing Standard*, 29(42), 42-50.

Titchen, A. (2000) *Professional craft knowledge in patient-centred nursing and the facilitation of its development*. University of Oxford DPhil thesis. Oxford; Ashdale Press.

Tod, A. (2015) Interviewing. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell. 388-400.

Topping, A. (2015) The quantitative-qualitative continuum. *In*: Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley-Blackwell, 159-171.

Tregunno, D., Baker, R.G., Barnsley, J. and Murray, M. (2004) Competing values of emergency department performance: balancing multiple stakeholder perspectives. *Health Service Research*, 39, 4, part 1.

Tropea, J., Amatya, B., Brand, C.A. and Expert Advisory Group. (2011) Use of consensus methods to select clinical indicators to assess activities to minimise functional decline among older hospitalised patients. *Australian Health Review*, 35, 404-411.

Turnbull, J. and Lathlean, J. (2015) Mixed methods research. *In:* Gerrish, K. and Lathlean, J. eds. *The research process in nursing*. 7th ed. Oxford: Wiley Blackwell, 371-383.

Turner, S., D'Lima, D., Hudson, E., Morris, S., Sheringham,J., Swart, N. and Fulop, N.J. (2017) Evidence use in decision-making on introducing innovations: a systematic scoping review with stakeholder feedback. *Implementation Science*, 12, 145.

Turpin, R.S., Darcy, L.A., Koss, R., McMahill, C., Meyne, K., Morton, D., Rodriguez, J., Schmaltz, S., Schyve, P. and Smith, P. (1996) A model to assess the usefulness of performance indicators. *International Journal of Quality in Health Care*, 8, 321-329.

VanDeVelde-Coke, S., Doran, D., Grinspun, D., Hayes, L., Sutherland Boal, A., Velji, K., White, P., Bajnok, I. and Hannah, K. (2012) Measuring outcomes of nursing care, improving the health of Canadians: NNQR (C), C-HOBIC and NQuiRE. *Nursing Leadership,* 25(2), 26-37.

Van Nie, N.C., Hollands, L.M. and Hamers, J.P.H. (2010) Reporting quality of nursing home care by an internet report card. *Patient Education and Counseling*, 78, 337-343.

Vasse, E., Moniz-Cook, E., Rikkert, M.O., Cantegreil, I., Charras, K., Dorenlot, P., Fumero, G., Franco, M., Woods, B. and Vernooij-Dassen, M. (2012) The development of quality indicators to improve psychosocial care in dementia. *International Psychogeriatrics,* 24(6), 921-930.

Walker, E. and Dewar, B.J. (2001) How do we facilitate carers' involvement in decision making? *Journal of Advanced Nursing*, 34(3), 329-337.

Wedderburn Tate, C. (1999) *Leadership in nursing*. London: Churchill Livingstone.

Weiner, J., Tanniru, M., Khuntia, J., Bobryk, D., Naik, M. and LePage, K. (2016) Digital leadership in action in a hospital through a real time dashboard system implementation and experience. *Journal of Hospital Administration*, 5(4), 34-43.

Weiner, S. P. and Dalessio, A.T. (2006) Oversurveying: causes, consequences, and cures. *In*: Kraut, A. ed. *Getting action from organizational surveys: new concepts, methods and applications.* San Francisco: Jossey-Bass, 294-311.

Werner, R.M. and Asch, D.A. (2007) Clinical concerns about clinical performance measurement. *Annals of Family Medicine*, 5(2), 159-163.

West, M., Eckert, R., Steward, K. and Pasmore, B. (2014) *Developing collective leadership for health care*. London: The Kings Fund.

Wilkinson, E.K., McColl, A., Exworthy, M., Roderick, P., Smith, H., Moore, M. and Gabbay, J. (2000) Reactions to the use of evidence-based performance indicators in primary care: a qualitative study. *Quality in Healthcare*, 9, 166-174.

Williams, T.M. and Smith, G.P. (2017) "Does training change practice? A survey of clinicians and managers one year after training in trauma-informed care". *The Journal of Mental Health Training, Education and Practice*, 12(3), 188-198.

World Health Organisation. (2015) *Institutional repository for information sharing*. Available at: www.who.int/iris [Accessed 20 January 2015].

Yearwood, E., Singleton, J., Feldman, H.R. and Colombraro, G. (2001) A case study in implementing CQI in a nursing education programme. *Journal of Professional Nursing*, 17(6), 297-304.

Yin, R. (2014) *Case study research: design and methods*. 5th ed. California: SAGE Publications.

APPENDICES

Appendix 1: Literature review search matrix

Search Strategy: used to search **Medline**.

#	Searches	Results
1.	((clinical indicators or metrics or performance indicators) and nurs* and decision-making).af.	30
2.	clinical indicators.mp.	1732
3.	metrics.mp.	13816
4.	quality indicators, health care/ or "standard of care"/	11803
5.	performance indicators.mp.	1775
6.	2 or 3 or 4 or 5	28411
7.	exp decision making/ or judgment/ or problem solving/	155566
8.	decision-making.mp.	132795
9.	7 or 8	215659
10.	6 and 9	1157
11.	exp Nurses/	71425
12.	nurs*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	570409
13.	11 or 12	570409
14.	10 and 13	134
15.	Midwifery/	15142
16.	Nurse Midwives/	6059
17.	midwi*.mp.	27165
18.	15 or 16 or 17	27165
19.	10 and 18	6
20.	14 and 19	3
21.	13 or 15 or 17	581410

22.	[from 22 keep 1]	0
23.	((clinical indicators or metrics or performance indicators) and nurs* and decision-making).af.	30
24.	clinical indicators.mp.	1732
25.	metrics.mp.	13816
26.	quality indicators, health care/ or "standard of care"/	11803
27.	performance indicators.mp.	1775
28.	24 or 25 or 26 or 27	28411
29.	exp decision making/ or judgment/ or problem solving/	155566
30.	decision-making.mp.	132795
31.	29 or 30	215659
32.	28 and 31	1157
33.	exp Nurses/	71425
34.	nurs*.mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier]	570409
35.	33 or 34	570409
36.	32 and 35	134
37.	Midwifery/	15142
38.	Nurse Midwives/	6059
39.	midwi*.mp.	27165
40.	37 or 38 or 39	27165
41.	32 and 40	6
42.	36 and 41	3
43.	35 or 37 or 39	581410
44.	32 and 43	137

Search Strategy: used to search **EMBASE**.

#	Searches	Results
1.	clinical indicator/	1838
2.	clinical indicator.mp.	2442
3.	metrics.mp.	18537
4.	performance indicators.mp.	2472
5.	1 or 2 or 3 or 4	23353
6.	decision making/ or ethical decision making/ or medical decision making/ or patient decision making/	223634
7.	decision-making.mp.	275714
8.	6 or 7	275714
9.	5 and 8	829
10.	exp nurse/	119643
11.	nurs*.mp.	636782
12.	exp midwife/	24147
13.	midwi*.mp.	29990
14.	10 or 11 or 12 or 13	649554
15.	9 and 14	42

Search Strategy: used to search **Web of Science**

(clinical indicators or performance indicators or metrics) AND (decision-making) AND (nurs* or midwi*)

Search Strategy: used to search **CINAHL**

#	Searches	Results
S10	S8 AND S9	88
S9	"decision-making"	77 860

S8	S4 AND S7	2173
S7	S3 OR S6	11 157
S6	"performance indicators"	618
S5	S3 AND S4	2106
S4	"nurs*"	674 745
S3	S1 OR S2	10 733
S2	"metrics"	2186
S1	"clinical indicators"	8641

Appendix 2: Literature review data extraction table

Authors	Aim	Participants	Method	Findings and relevance to the study
Griffiths 2008	Discussion on metrics for nursing		Journal Feature	Metrics must be sensitive to the unique contribution nurses make to practice. Can be used to enhance quality care delivery, incentivise nurses and ensure quality is not neglected in drive to meet targets. Indicator development should include measures of safety, effectiveness and compassion
Heslop and Lu 2014	To report a concept analysis of nursing-sensitive indicators within the acute setting		Concept Analysis	Two main attributes identified. Structural, including hours of nursing care per patient day and staffing and outcome attributes related to patient care including, prevalence of pressure ulcer, falls, patient/family satisfaction with care. Discusses the history of indicators in America, the Donabedian framework and implications for healthcare. Suggests insufficient use and application of nursing process measures
Burston et al. 2013	To review nurse-sensitive indicators that may be suitable to assess nursing care quality		Literature review (2002-2011)	Commonly used indicators are inconsistent in evidencing nurse-sensitivity. Issues identified include definitions, data collection and analysis methods. Nurse managers need to be aware of the factors that can influence use of indicators at unit level
McCance et al. 2011	To gain consensus on Key Performance Indicators that are appropriate and relevant to nursing and midwifery	Nursing and midwifery staff in two Trusts in Northern Ireland, senior nurses across the country, representatives from education, government and professional bodies, and service users	Consensus approach using a nominal group technique	Eight indicators reflecting person-centred aspect of nursing and midwifery care identified. Measurement of these indicators will provide an opportunity to evidence the unique impact of nurses/midwives on the patient experience. Potential challenge as to whether patients will be able to differentiate care quality in the indicators between nurses and other members of the multi-disciplinary team
Rambur et al. 2013	To explore potential negative unintended consequences of performance metrics		Case study	Inconsistent and contradictory evidence on effectiveness and patient benefit from indicator use. Possible inappropriate clinical care, lack of focus on patient concerns and concessions in patient independence and education. Challenges to clinical decision-making. Nurse ideally placed to identify metric driven harm and moral distress. Data manipulation can improve metrics but decrease quality of care.
Griffiths et al. 2008	Reviews the status of the evidence base on nursing metrics and provides recommendations on the way forward for nursing		Research paper.	Sets metrics within the current healthcare agenda. Discusses need to make nurses contribution “visible” and also to develop indicators in relation to patient outcomes and experience. Defines a good indicator. Identifies common indicators and evidence base for associating between nursing and outcomes

Authors	Aim	Participants	Method	Findings and relevance to the study
Dubois et al. 2013	To develop a theoretically based framework to conceptualise nursing care performance, to analyse how the components of the framework have been operationalised in the literature and to develop a pool of indicators sensitive to aspects of nursing care		Concept analysis using systematic review	Current conceptualisations reflect a system perspective based on Donabedian and Parsons' theory. Nursing Care Performance Framework developed based on three key functions of performance, acquiring, deploying and maintaining resources, transforming resources into nursing services and producing changes in patients' condition. Operationalised through 14 dimensions that cover 51 variables Describes aspects of the nursing role as "invisible". Pushing staff to deliver on an unreasonable number of targets may increase stress, lower morale and compromise quality and performance
Curtright et al. 2000	Development of a performance measurement system to provide a comprehensive view of the subject organisations' performance	Three sites, multiple practice areas and specialities	Case study	Describes the forces driving performance management and measurement, the process used to address these, the outcomes and lessons learnt. Use of Kaplan and Norton's balanced scorecard Need to link limited number of indicators (adjustable to different contexts) to strategic gaols
Heslop 2014	Argues that Australian nurses can make cost savings and improve quality of care if they have access to meaningful data.		Editorial	Identifies "structural" indicators –staffing levels, skill mix, nurse: patient ratio and "outcome" indicators – prevalence of falls, medication errors etc. Link between nurse levels and adverse incidents but not with quality of care. Development of the EN role. Potential for reduction in registered nurse numbers yet nurses pivotal in managing quality and risk. Discussion on cost of adverse incidents and how, if nurses have access to outcome data, they can act to reduce costs and risk.
Ousey and White 2010	Explores the impact of the quality agenda on tissue viability services and development of achievable metrics.		Discussion paper	Discusses the quality agenda in healthcare. Highlights patient related outcome measures and examples of metrics. Need for nurse education in relation to metrics and inclusion of multi-disciplinary team.
Pazargadi et al. 2008	Identification of indicators in nursing care for the healthcare system in Iran.	Nurses from seven provinces in Iran n=220.	Descriptive, exploratory study through use of a questionnaire. Quantitative.	Seventy-seven indicators in seven categories identified through selection of those with high means in "importance, scientifically soundness and feasibility of implementation". Structure indicators – leadership, nurse: patient ratio and in-service education. Process indicators- time and quality of care and nurse satisfaction with nursing management. Outcome indicators- complications and adverse incidents and patient satisfaction with nursing care.
Rosati et al. 2009	To identify if there is a relationship between patient and staff satisfaction and if so how can this be capitalised on.	3,000 staff responses and 19,067 patient responses	Patient and staff surveys	Staff satisfaction linked to strong organisational culture. The more the nurses perceived the organisation to focus on quality and patients the more patient satisfaction increased. Organisational willingness to engage with staff development was significant.

Authors	Aim	Participants	Method	Findings and relevance to the study
Noh and Lee 2014	To identify what aspects of nursing care are most frequently undertaken by student nurses and determine level of change in the outcomes through the use of a computerised system.	Nursing students from two nursing schools in South Korea n=153	Comparative descriptive. Quantitative. Student clinical input data was extracted from a web-based nursing documentation system	Provides 30 nursing diagnosis and outcomes. As for nurses, pain was the most frequently selected diagnosis suggesting this was considered the most immediate and important to act on. Also hyperthermia, constipation and skin integrity. Strong emphasis on education of patients. Possibly due to the fact that families often contribute to care and thus need preparation for this.
Kleinknecht-Dolf et al. 2014	To develop an instrument for measuring the complexity of nursing care		Pilot study. Descriptive, explorative cross-sectional survey and qualitative questionnaire	Perrow's framework utilised. To estimate the impact and outcomes of nursing it is necessary to have knowledge of the patient situation. Discusses the role/goals of nursing and the complexity of decision-making. Some units assessed the complexity of nursing care as "not or slightly complex" despite highly complex patient situations and decision-making requirements. Possibly nurses learn to perform accurately and methodically even in highly complex situations and come to terms with the complexity. "Extreme complexity" was rated in areas were certain care needed to be carried out by nurses with several years' experience.
Baxter and Rideout 2006	Sought to discover how student nurses make decisions in the clinical setting.	Student nurses n=12	Qualitative, intrinsic case study.	Discusses emotion and knowledge based responses. Student/patient encounters most complex. Desire to keep the patient happy and avoid conflict. Students often did what the patient wanted even if they knew it was unsafe. Lack of confidence, fear of upsetting nurses, respect and recognition of nurses power left students unable to approach nurses for help.
Ousey and White 2009	Aims to raise the agenda of accountability in the field of tissue viability.		Editorial	Specifies the quality agenda in the UK. Provide a challenging definition of metrics. Highlights the need for practitioners in the field of tissue viability to consider evidencing quality of care delivery.
Idvall et al. 1997	To describe and analyse the characteristics of clinical indicators		Literature review	Provides a definition of a clinical indicator and discusses structure, process and outcome. Identifies influences behind the selection and development of indicators. Uses the word "threshold" to identify the level between what is considered good or not.
Northcott and Harvey 2012	To examine the relationship between public perceptions of KPI's assessing various aspects of the health-care system.	4,000 adults randomly selected each year.	Cross-sequential survey approach using telephone calls.	Developed from business in the private sector to support the Ministry of Health Accountability Act. Discussion of reasons for patients excusing deficiencies in care. Highlights the use of KPI's to assess patients' perceptions of healthcare in general and particularly the role the media plays.
Rutherford 2014	Explain the need for a standardised nursing language		Discussion paper	Explains what a standardised language is and the benefits to nursing. Identifies some of the nursing languages available and discusses these in-depth.
Pearson 2003	Raising the profile of KPI's		Editorial	Highlights the importance of KPI's in the current climate in order to support higher quality outcomes.

Authors	Aim	Participants	Method	Findings and relevance to the study
Kontio et al. 2011	Identifies important information in the care processes of cardiac patients	Ward sisters and nursing staff, physicians and senior managers - managerial "experts".	Qualitative study in two phases. Phase one - online questionnaire. Phase two -interviews	Relates to information flows and how decisions are made. Used the critical incident technique to analyse incidents to identify what information was important in care. Focuses on managerial decision-making. Identifies that single points of action are not enough and that fluent management requires a comprehensive picture of the care process.
Griffiths and Maben 2009	Explaining the scope of measuring quality of care through use of indicators		Short article	Addresses briefly the question "can nursing performance be measured?" and calls for metrics as a means of making the impact of nursing "visible".
Kurtzman and Corrigan 2007	A summary of National Quality Forum's consensus development process	The public and NQF members	Discussion paper	States the rules against which indicators were developed. No consensus on the link between nurse education and quality. Suggests these measures foster a climate receptive to monitoring and reporting nurses' influence.
Houser et al. 2012	To determine the relationship between nurse decision-making and patient outcomes	Nurses	Quantitative causal-comparative study	Policy should be based on evidence but none available that demonstrated that nurse involvement in staffing decisions generated positive patient outcomes. Involving nurse in outcome evaluation was associated with better patient outcomes. A relationship was identified between job satisfaction, retention and decision-making. Direct care nurses often make decisions independent of leadership. Organisation governance includes little direct care nurse involvement. Nurses expect to be held accountable for their decisions. Use Weston's (2008) theory framework
Drake 2013	Discusses the use of dash boards and balanced scorecards		Discussion paper	Identifies how dashboards can be used to aid decision-making in nursing. Discusses what needs to be considered before setting up an electronic system and how to use it to best advantage.
Barnsley et al. 2005	To identify indicators for family practice	Physicians n=11 and one nurse practitioner	Delphi study	Development of indicators for primary care. Challenges in developing a performance assessment system-inconsistent supporting evidence and lack of communication in multi-disciplinary team leading to information not being up-to-date. Activities identified that might be carried out but weren't recorded; it was suggested that actions that identified problems were more likely to be recorded.
Greenhalgh et al. 2014	Presents debate on the development of evidence-based practice		Discussion paper	Argues that although intended to act as a means of strengthening practice, evidence-based practice has had some negative consequences. It is open to "gaming", and person-centredness has the potential to be overtaken by performance concerns. Volume of evidence has become unmanageable and evidence-based guidelines may not take into account co-morbidities.
Cokins 2013	Information paper on dashboards and balanced scorecards.		Web based information	Explains the differences and uses for dashboards and balanced scorecards. Discusses how these systems may be of use in organisations.

Authors	Aim	Participants	Method	Findings and relevance to the study
Groff-Paris and Terhaar 2010	Presentation of a performance improvement project	513 nurses in a hospital and one unit in a hospital.	Mixed methods. Phase 1- survey Phase 2 – pilot in one unit of a service improvement initiative. Phase 3 - evaluation	Discusses creation of a tool based on Maslow's pyramid and NDQNI, to enable nurses to interpret and analyse their units' indicator data. Also, the piloting of an intervention designed to improve nurses' perceptions of their work environment and promote safer delivery of patient care. Highlights how nurses previously were not involved in the collection and analysis of data related to their areas and therefore nurses did not engage or support the projects.
Hahtela et al. 2014	To explore the influence of culture on sickness, overtime and injury in primary care	Healthcare organisations n=9, with acute in-patient units n=21	Cross-sectional survey	For managers to improve nursing outcomes they need to understand the influence of culture on these outcomes. A negative perception of management will impact on sickness, injury and overtime. Staff shortages will increase. Happy staff equals happy patients.
Maben 2008	Response paper on the topic of the value of nursing.		Editorial debate	Suggests that nursing work is subordinate to other more visible and accountable activities. Discusses previous research the author has undertaken where student nurses encountered barriers meaning their work was undermined and undervalued. Highlights the challenge of making the role of the nurse more visible.
Graham-Dickerson et al. 2013	To explore the perceptions of nurses regarding their involvement in decision-making.	Nurses from 10 hospitals	Qualitative descriptive study	Discusses the use of shared governance as a process to enable nurses to feel heard and improve decision-making. Identifies different means by which nurses can contribute and suggests that this increases job satisfaction. Nurses expressed a wish to be more involved in the multi-disciplinary team and administration decision-making. Asking for and trusting nurses judgements was perceived to increase staff confidence and improve performance. Greater feeling of ownership in the organisation. Key to this was involvement by unit staff at hospital council; the necessity of the feedback loop.
Joseph 2007	Presents a conceptual framework of 6 nursing care constructs that affect outcomes		Discussion paper	Culture, staffing levels and other variables have no direct effect on outcomes except through the influence of these on delivery of care. Discusses the constructs of environment, unit qualities, nursing qualities, patient qualities, nursing care and outcomes.
Kötter et al. 2013	To explore the inclusion of patients in development of quality indicators.		A systematic review	Patient views on quality improvement and desired outcomes should be included. Their involvement has an impact on acceptance of the indicators in practice. However, not all patients want to be involved in decision-making. Identifies 11 articles and 4 web-based documents that identified inclusion of patients' opinions in indicator development.
Health Information and Quality Authority 2013	Guidance on development of KPI's		Guidelines	Information relevant to development of KPI's and minimum data sets to monitor healthcare quality in the Republic of Ireland. Discusses the role of KPI's, reasons for use and data reporting

Authors	Aim	Participants	Method	Findings and relevance to the study
Donabedian 1988	Seminal paper describing a model for assessment.		Discussion paper	Identifies the structure, process and outcome model for assessment. Argues for what is or is not quality and suggests how it can be assessed.
Gagliardi et al. 2008	Explores stakeholders beliefs about patient participation in indicator development	Physicians n=5, nurses n=5, managers n=5, patients n=15	Exploratory study using interviews and a grounded approach.	Examines professional and patient attitudes to patients' participation in selection of indicators. They should be involved but professionals and some patients believed this should be in a consultative role rather than decision-making. Discussion about culture in relation to patient involvement in service planning and evaluation of services.
Dancet et al. 2013.	What is the relative importance of the six dimensions of quality in infertility care according to different stakeholders and can an indicator set address all needs?	Gynaecologists, embryologists, counsellors, nurses/midwives and patients	A three round Delphi study	Identifies 6 dimensions of quality care. Patients and multi-disciplinary team involvement in the study to evaluate the importance of dimensions and develop indicators incorporating patient and multi-disciplinary team views.
Lang 2008	Argues the case for real time information systems		Discussion paper	Presents the benefits for an IT system that can manipulate patient data in real time. Then discusses development of such a system although at the time of writing it was not clear that it had been implemented in practice.
Royal College of Nursing 2011	Information paper on the use of electronic information systems in nursing		Professional publication	Explains the principles of dashboards and their use. Identifies systems in use across the United Kingdom.
Donaldson et al. 2004	Review of knowledge use processes and uptake of innovation.		Discussion paper	Highlights how adoption, dissemination and diffusion of new knowledge help validate the potential of evidenced-based to improve practice. States that few organisations evaluate the adoption of activities which have resulted from the transfer of knowledge into practice. Few organisations have evaluated how well or to what extent KPI's have been accepted in practice.
Francis 2013	Report on a public inquiry into why serious problems at an NHS Trust were not identified and acted on sooner, and what should be done to prevent it happening again in future		Government Report	Its findings highlighted a negative culture involving a tolerance of poor standards and managerial and leadership mismanagement across all levels in the organisation. Concludes that it would be possible for these failings to reoccur elsewhere in the healthcare system. Calls for openness and transparency and involvement of service users in all aspects of their care. Clear lines of communication across organisations and leadership development.
National Quality Forum 2004	Presents the first set of American KPI's that measure nurses' contribution to quality care and patient safety.		Professional body report	Report details 15 national voluntary consensus standards for nursing-sensitive care and it identifies principles for implementing them as well as priorities for research. Includes 15 KPI's featuring outcomes such as falls and infections, health promotion such as smoking cessation and structural KPI's related to aspects of nurse staffing.

Authors	Aim	Participants	Method	Findings and relevance to the study
Senge 1990	Discusses management "disciplines" necessary for learning organisations		Book	Focuses on group problem solving using the systems thinking method in order to convert companies into learning organizations. The five disciplines represent approaches (theories and methods) for developing three core learning capabilities: fostering aspiration, developing reflective conversation, and understanding complexity.
National Quality Forum 2003	Presents a framework for constructing a set of hospital care consensus standards		Professional body report	Recommends processes for reporting, implementing, maintaining, evaluating, and improving the set of KPI's. This work led onto the development of the first set of KPI's detailed in the National Voluntary Consensus Standards.
Lee at al. 1999	To identify studies of nursing care quality that evaluate the links between process and patient outcomes.		Literature review	Identifies types of nursing processes described in retrieved articles and compares against information related to outcomes. Recommendations include further study to evaluate how nursing problem identification relates to subsequent nurse performance and patient outcomes
Attree 2001	To explore the perceptions of healthcare professionals, patients and relatives concept of quality care.	Nurses, doctors, managers n=36, patients n= 34, relatives n= 7	Qualitative approach using grounded theory. Exploratory, descriptive study.	Presents the argument that validity and reliability of quality measures is questionable if as some authors have stated quality is too diverse a concept to be measured. Discusses the nature of the practitioner under "care processes" – emotional labour of nursing and how nurses put an emphasis on meeting the needs of the patient so that outcomes may be met despite poor resources (structure) and processes.
Harte et al. 2012	Discusses implementation of an electronic dashboard.		Discussion paper	Highlights the real-time benefits of use of dashboards. Communication to frontline and executive managers, alerts staff pre and when process fails. Improvement efforts can be focused on area of need and impact can be quickly identified. Decisions can be made based on current situations. Patients receive better care.
Sermeus et al. 2008	To develop a measure of the intensity of nursing care	Acute hospitals n= 115	Quantitative retrospective analysis	Identified the content of 23 nursing KPI's not reviewed for 20 years. The San Joaquin classification system was used to measure intensity of care delivered over a set retrospective period of time. Both intensity and type of care were measured. The intensity of care increased but nature of care did not change. May provide way to examine the relationship between workload/patient acuity and staffing and patient outcomes.
Hedges et al. 1999	Proposes indicators for discharge planning based on findings from a literature review.		Literature review	Highlights the need for stakeholder feedback but identifies limitations due to lack of research evidence on this topic. Based indicator development on structure, process, and outcome. Suggest that the indicators are best implemented through policies and procedures.

Authors	Aim	Participants	Method	Findings and relevance to the study
Clarke et al. 2003	To develop indicators for end-of-life care in ICU.	Critical end-of-life peer work group n=36, physicians =15, nurses n=15	Literature review and consensus	Identified a comprehensive set of quality indicators including patient and family-centred decision-making however, no patients or family were included in development of the indicators. Evidence was gathered from literature and ethical guidelines. Highlight the need for validation before implementation.
Fero et al. 2010	Discusses the concept of critical thinking.		Discussion paper	Examines the use of simulation to measure critical thinking skills in student nurses.
Argyris 1960	Considers organisational behaviour		Book	Discusses various aspects of individual behaviours such as frustration, tension, conflict and other defensive behaviours and their impact in organisational situations. Includes case studies.
Maben et al. 2012	To build the evidence base and theory on metrics for future use in the development of indicators		Research paper	Builds on the information provided in a previous research paper on metrics. Contributes to the establishment of a small set of key indicators of high quality nursing and design of an infrastructure to enable national consistency and benchmarking.
Snell 2015	Report on Safe Staffing Alliance campaign		Journal feature item	Report presents campaign to persuade politicians that staffing levels are key to solving NHS problems. Identifies a manifesto for safe staffing. Highlights issues with the current reporting of staffing levels.
Mattke et al. 2003	To design and implement a reporting system for quality care.		Discussion paper	The study does not identify what process was used to select the indicators stakeholders were include but considering this system was to be launched to the public no pilot appears to have been run.
Arah et al. 2003	Reviews conceptual frameworks for performance		Discussion paper	Reviews conceptual frameworks in Australia, USA, Canada and UK as well as WHO and other international bodies. Identifies gap in the knowledge-base for how performance output data is used to improve quality care.
Royal College of Nursing 2011	Guidance for nurses on electronic documentation and technology		Guidance paper	Discusses the current use of electronic management of patient information. Highlights issues in relation to this.
Fossum et al. 2011	Explores thinking strategies and clinical reasoning processes of nurses during simulations	Registered nurses n=30 in nursing homes n=9	Qualitative using think aloud techniques	Assess findings against Fonteyns 17 thinking strategies. Identifies a tendency to go straight to planning care without data collection. No systematic risk assessment done. Numerous decisions made but may be ineffective due to lack of data collected. No explicit consideration of EB when making choices. This study would be evidence of benefit of KPI's as they should be evidenced-based.
Kavanagh et al. 2012	Highlights the need for healthcare reform.		Discussion paper	Discusses patient harm in relation to KPI's recording infection rates and the overuse of antibiotics. Transparency of KPI measures allow consumers to chose care providers. Focuses on structure and outcome measures rather than process. Despite having the highest spending on healthcare, the USA has some of the poorest quality care.

Authors	Aim	Participants	Method	Findings and relevance to the study
Dunton et al. 2004	Estimates the relationship between three aspects of nurse staffing and the patient fall rate for acute care units	One year of data from 1751 hospitals	Retrospective analysis using a generalized linear mixed model	Higher fall rates were associated with fewer nursing hours per patient day and a lower percentage of registered nurses, although the relationship varied by unit type. Smaller hospitals also had higher fall rates.
Dunckley et al. 2005	Discusses the use of outcome measures to assess effectiveness and outcomes of treatment and interventions.	Patients and staff in a specialist hospice inpatient unit and a nursing home	An action-research approach discussion paper	Suggests that use of the same tool in diff contexts has issues as not always appropriate. A critical and unresolved barrier was top down approach. Implementation barriers: top-down decision-making; KPI's perceived as time-consuming to use; limited resources for data analysis; and a lack of knowledge of the importance of KPI's. Enablers: involving all staff in decisions about implementation; using a measure that can be adapted to organisation needs and clinical practice
De Casterlé et al 2008	Examines the impact of a leadership development programme on the team and care processes	Nurses n=9, physios n=3, psychologist n=1, occ therapist n=1, Dr n=1, head nurse and nursing manager	Mixed methods case study	More transformational and less transactional leadership attributes following the programme. Increased self and team management, better relationship with the organisation, communication, autonomous work environment, sense of responsibility to patients, nurses encouraged to problem solve and resolve team issues, nurse development, more clarity and structure that enhanced control over practice (characteristics of Magnet). Supported by interview data only, no hard evidence.
Leveck and Jones 1996	Examines the effects of key factors in the nursing practice environment—management style, group cohesion, job stress, organizational job satisfaction, and professional job satisfaction—on staff nurse retention and process aspects of quality of care	50 nursing units at four acute care hospitals	Tested a four-stage theoretical model	The model, which is modified from Hinshaw and Atwood's (1985) anticipated turnover model, explained 49% of the variance in staff nurse retention and 39% of the variance in process aspects of quality of nursing care. Results substantiate the belief that aspects of the practice environment affect staff nurse retention, and the quality of care delivered in hospitals
Duffield et al. 2007	Explored whether nurse staffing, experience and skill mix influenced care in medical-surgical wards	Data from 80 randomly selected medical-surgical wards in 19 public hospitals and nurses (n = 2278)	Retrospective analysis and nurse surveys	Skill mix, nurse experience, nursing workload and factors in the ward environment significantly influenced the model of care in use. Wards with a higher ratio of degree qualified, experienced registered nurses, working on their 'usual' ward were more likely to practice patient allocation while wards with greater variability in staffing levels and skill mix were more likely to practice team nursing. Nurses adapt the model of nursing care on a daily or shift basis, according to patients' needs, skill mix and individual ward environments.

Authors	Aim	Participants	Method	Findings and relevance to the study
Paquet et al. 2013	Explores the psychosocial variables that explain organisational outcomes of medication errors and length of stay	Healthcare workers n=243 from 13 different units	Path analyses	Links data between work climate scales, effort/reward, and social support to absenteeism, turnover and overtime to nurse/patient ration, medication errors and length of patient stay. Staff active in decision-making are more satisfied with their work and quality care increases as does staff retention. Employee's perception of the work environment is an important indirect predictor of patient outcomes. Happy staff=happy patients
Shuldham et al. 2009	To explore the relationship between nurse staffing and patient outcomes	A NHS Trust comprising two hospitals	Case study using retrospective data	Patient data extracted from hospital records over a one-year period. Patient outcomes analysed to determine if the outcomes of care was related to various aspects of nurse staffing. Weak association found and study did not replicate previous findings.
Mitchell and Soule 2008	Chapter in a book on patient safety and quality of care		Book	Provides some examples of positive rather than negative KPI's e.g. use of pressure relieving mattresses to prevent pressure ulcers. Discussion on nurses' role in safety and most critical contribution being the co-ordination and integration of quality care within the nursing and MDT and highlights their key role in communication.
Sorensen and Iedema 2010	Aims to understand the environment of health care, and how clinicians and managers respond in terms of performance accountability	45 participants including: divisional, departmental medical directors, consultants, manager, clinical educators and staff nurses	Qualitative research	Specific focus on ICU. Discusses need for MDT working and agreement on measures of performance. Good patient outcomes require processes whereby all MDT and family can contribute at key points. Highlights limited studies available on the relationship between corporate and clinical domains. Need to pool resources and collaborate to address problems as they arise.
Edelen and Bell 2011	Evaluation of an intervention designed to develop student nurses decision-making skills	51 students and 10 lecturers	A quasi-experimental, non-equivalent group, post-test-only, comparison group de-sign	Supportive feedback on journal entries and direction to evaluate the details and actions of a clinical decision in relation to past decisions enhanced students' learning from their experience. Lecturer supported reflective practice enhances learning as does case study comparison based on students' personal experiences and past theoretical or experiential knowledge.
Anderson et al. 2012	Discusses implementation and sustainability of quality improvement programme.		Discussion paper	Identifies components of complexity science and means of achieving high quality outcomes. Also, aspects of psychological safety and challenge with peers.
Kaplan and Norton 1992	Seminal paper on the development of balanced scorecards		Discussion paper	Describes the development of measures that provide managers with a comprehensive overview of the performance of their business. Emphasis is on strategic use of KPI's to track performance and selection of the most effective measures and what should be taken into account for this to happen. The balanced score card identifies goals but assumes that people will make whatever changes are needed to reach this goal. The focus is not on control but rather desire to reach an agreed vision.

Authors	Aim	Participants	Method	Findings and relevance to the study
Zeitlin et al. 2003	Development of a set of perinatal KPI's for European use	Obstetricians, paediatrics, epidemiologists/ statistician n=unclear. Plus a midwife and a service user. An additional panel of 15 midwives subsequently run.	Delphi consensus	Suggested KPI's for inclusion in selection requested from national and international experts. Time between Delphi rounds allowed for language barriers to be addressed. Little mention of the patient experience in the suggested KPI's. This was highlighted as need to address.
Yearwood et al. 2001	Implementation of a continuous quality improvement effort at a nursing school.		Discussion paper	Discusses use of a Report Card to organise and monitor quality improvement. Presents a sample Report Card and discusses its use in quality assessment. Examines the process of implementing change and barriers that occurred, initial scepticism, time to embed change. Accreditation as a driver for change and use of benchmarking outcomes to enable comparisons and again drive change.
Stricker et al. 2009	Use of a questionnaire to gauge next-of-kin satisfaction in ICU and identify opportunities for improvement.	23 ICUs. 996 completed questionnaires	Quantitative research.	Measures to assess satisfaction pre-set within the instrument used. Limited discussion of these. A few open-ended questions but qualitative analysis not presented.
Walker and Dewar 2001	To investigate carers' involvement in decision-making in an older persons psychiatric unit	Carers n=20, nurses and assistant nursing staff n=17, doctors n=5, occupational therapists n=2, social workers n=2, community psychiatric nurses n=3.	Case study	Identifies that carer involvement in practice is not happening. Discusses various factors as to why this may be, placing them into two categories: hospital systems and processes and the relationship between nurses and carers. Argues that for involvement to improve staff need to firstly identify the issue and then challenge the relevant barriers.
Vasse et al. 2012	The development of KPI's to improve psychosocial care in dementia	49/114 questionnaires returned in round 1.14/49 responses to second round.25 experts agreed on final selection of 12 KPI's	RAND modified Delphi consensus	No patient or carer involvement in KPI development. No specific KPI related to satisfaction with care. However, "preference" is noted within two KPI categories as is the need to "tailor" care to patients and carers thus indicating involvement of both in decision-making. Care of carers is also included within a specific category. The use of patient records as the data source to measure the KPI's was identified as an issue as most records were incomplete leading to under-reporting of care delivery. Recommends interviews with carers in future studies to help address this.

Authors	Aim	Participants	Method	Findings and relevance to the study
Van den Heede et al. 2007	To assess key variables used in research on nurse staffing and patient outcomes	24 researchers and 8 nurse administrators from 10 countries	Delphi consensus although no panel meeting occurred	International study to examine which KPI's best measure the relationship between staffing and patient outcomes. Mortality is the most widely recognised KPI however a need was recognised for nurse specific care. KPI's mainly structural and outcome based. Some process based KPI's nominated by experts included smoking cessation advice, counselling for various conditions and pain assessment/interventions
Van Nie et al. 2010	Test of an internet report card to assess if consumers can interpret the information provided to gain valued and reliable opinions on which to base decisions on choice of nursing home.	Service users and relatives from a consumer group. 42 university students, 70 nursing staff, managers and quality coordinators from nursing homes	Experimental design	Netherlands has a national database of KPI data. Participants rated consumer satisfaction with quality care highest and information on KPI data relatively low. However, when only consumer satisfaction was available, the report card was viewed more negatively perhaps due to belief that information was deliberately being withheld.
Tregunno et al. 2004	Explores what different stakeholders believe is important to gauge performance in an ED.	Hospital: Physicians, nurses, frontline and senior managers. Community: home care case and senior managers. Prehospital: paramedics, clinical programme directors and admin staff. Total n=685 respondents, a 62% response rate.	Nominal group process to identify KPI's for inclusion on a questionnaire. Then quantitative analysis of multiple stakeholder responses to this questionnaire.	Different groups have different preferences. Quality improvement relies on teamwork therefore it is important to identify relevance to practice in order to enhance change effectiveness. It is suggested that managers' view of what is important may supersede that of practice staff and that they need to be aware of multiple viewpoints and reflect this in improvement initiatives. Use of the Competing Values Framework of Organisational Effectiveness (adapted from Quinn and Rohrbaugh 1983) to articulate performance perspectives of the different stakeholders.
Tropea et al. 2011	To select KPI's to assess activities to minimise decline in older hospitalised patients	Medical, nursing and allied health professionals, total n= 13. Plus project team. Number not specified	Delphi consensus	No service user or carer involvement. 17 process based KPI's and 2 outcome based. Literature review and web search of grey material carried out. Rating based on importance, feasibility and scientific soundness, not usability. Evaluated the process at the end. Identified a lack of person-centred KPI's in literature as reason for these not to be included in the final selection. Highlights data burden briefly.
Wilkinson et al. 2000	To explore reaction to the introduction of KPI's for stroke and cardio.	GPs n=29, practice managers n=11, practice nurses n=12 across 15 primary care practices	Qualitative study	Evaluates introduction of KPI's and identifies barriers and facilitators. MDT KPI's mainly, only smoking cessation nurse-sensitive. Benefits: capacity to monitor quality care, increased efficiency and facilitates up-to-date practice. Barriers: data burden, decreased autonomy and trust, financial penalties and short-term expectations of improved care quality. Lack of teamwork; discussion happening within professional teams rather than across, terminology, time, issues with dissemination of action plans.

Authors	Aim	Participants	Method	Findings and relevance to the study
Shield et al. 2003	To determine KPI's generic to primary care in mental health services	Eight panels of professionals: psychologists, health and social care commissioner, psychiatric nurse, counsellor, GP, nurse (practice, district, health visitor), psychiatrist, social work. One care panel, one service user panel and one voluntary panel. Total numbers not specified	Delphi study in mental health	Participants never met. Very wide range of participants which includes patients and carers. Highlights that service user participation in consensus has been absent previously. More professionals involved therefore less KPI's selected that reflected the aspects of care desired by service users. KPI's written as standards deliberately as a starting point and resource for organisations and practices to consider for use in meeting targets and improving practice.
Smith 2007	Highlights nurse-sensitive measures in USA		Editorial	Discussion paper on history of KPI's in USA, specifically the NQF. States 15 NQF standards although some of these read as KPI's
Talungchit et al. 2013	To identify KPI's for preeclampsia and post-partum haemorrhage	16 staff comprising national policy makers, doctors and nurses	Delphi study	Patients not included. No patient experience KPI's. Written by medical staff and the KPI's have a heavy medical emphasis. Nurses involved in selection and aspects of nursing evident in KPI's e.g. vital signs, urinary catheter, IV fluids, symptom monitoring.
Pekkarinen et al. 2008	To examine the relationship between nurse time pressure and management practice and prevalence of pressure ulcers and use of hypnotics and antianxiety medication in undiagnosed patients.	724 nursing staff, licensed practical nurses, registered nurses and head nurses. Numbers not given	Quantitative survey	Prevalence of pressure ulcer and administration of hypnotics and anti-anxiety medication linked to poor care. Data collected from existing Minimum Data Sets. Compared to survey results which looked at staffs perceived views on time pressure and management practices (not clear what this constituted). Link established. Recommends effective communication and collaboration.
Phillips et al. 2007	Looks at an alternative way to judge nursing home performance		Discussion paper	Highlights issues with published rankings when used to decide on a good home and instead suggests ruling out homes with poor performance. Various rationale given for this including the argument that good in one facet of care does not necessarily equate to good in all. However, poor in an aspect of care is more likely to indicate poor performance in other areas. Would debate the argument that the use of KPI's in nursing homes poses unique problems. The reasons presented for this could just as equally apply to a general medical unit.

Authors	Aim	Participants	Method	Findings and relevance to the study
Campbell et al. 2002	Research methods used to develop and apply KPI's in primary care		Discussion paper	Provides definitions and examples of KPI, standards, review criteria and guidelines. Differentiates between performance and quality KPI's- performance does not infer quality. Stakeholders will have different values and rate KPI's differently in consensus. Patients relate quality more to attitude, clinical performance and communication skills. Argues that to improve quality the focus should be on process KPI's. Discusses non-systematic and systematic methods of developing KPI's. Case studies – non-systematic. Defines Delphi, RAND appropriate, nominal group technique, guidelines.
Adams et al. 2011	To explore unintended consequences of performance measurement systems	4 sites, 59 interviews with doctors, nurses and managers	Qualitative study	Performance measurement systems well embedded and consistently high scores achieved. Decision made to try and improve practice by reducing negative unintended consequences of KPI implementation rather than seek to further improve already high scores. Study to identify what the negative consequences are. These include: polypharmacy, patient frustration with repeated use of KPI's in part due to systems which do not accept patient refusal of treatment. Patient education reduced due to time pressure of meeting other KPI's.
Dickerson et al. 2001	Development of a learning strategy which involves use of guidelines to evaluate clinical decision-making tools.		Discussion paper	Discusses use of pathways and algorithms. Provides guidance for evaluation of quality indicators. Highlights nurses need to increase knowledge of decision-making tools to help plan care and evaluate outcomes.
Kröger et al. 2007	Selection of indicators suitable for older adults with cognitive impairment	33 experts from across 10 areas. GP n=6, geriatricians n= 3, nurses n=6, psychologists and neuropsychologists n= 5, pharmacists n=4, occ.therapists n=3, dieticians n=3 S workers n=3.	Modified RAND appropriateness Delphi	No patient or carer involvement in agreement of KI's however, 40 were involved in a phone pat/sat interview to assess feasibility of agreed KPI's plus 29 patient notes reviewed. KPI's accessed through a separate web link and revealed a mix of multiprofessional KPI's. Nurse sensitive KPI's recorded on the relevant table of indicators.
Lodewijckx et al. 2012	Selection of COPD KPI's	Doctors n= 19, nurses n=8, physiotherapists n=8	Delphi study	International study. Identified process and outcomes KPI's for use in follow-up studies on quality e.g. care pathways. No patient involvement although several of the KPI's are patient and family focused. More medical KPI's identified and possible reasons given apart from higher percentage of medics involved.

Authors	Aim	Participants	Method	Findings and relevance to the study
Una Cidon et al. 2012	Explores nurse satisfaction after the introduction of chemotherapy drug protocols	Drs, pharmacists, nurse managers and nurses in one unit n=5	Likert scale survey	The study showed that nursing staff satisfaction with new improvement measures taken improves safety and finally quality of care. Reduced the variability in the care provided in a unit by standardising protocol then assessed nurses satisfaction with quality of care.
Foulkes 2011	Discussion paper aiming to increase understanding of nursing metrics		Discussion paper	Cites some case studies of action that has been taken on KPI data to improve practice but at least 5 years old. Discusses dashboards, the Productive Ward and LEAN with their focus on staff measuring practice to improve it. Highlights that no database similar to that of the NDNQI exists in UK.
Adams and Iseler 2014	Examines the relationship between nurses emotional intelligence and patient outcomes	Clinical nurses n=361 from 8 units across 2 hospitals	Quantitative	There is a correlation between emotional intelligence and patient outcomes however, the sample size n=8 was not sufficient to identify to what extent this correlation exists. The Press Ganey questionnaire was used to assess patient satisfaction and the Mayer-Salovey – Caruso Emotional Intelligence Test was used with nurses. Various structural, process and outcome KPI's were compare.
Lee and Wang 2014	Development of humanistic indicators for use in the primary care setting	23 experts. Academics n=10, industry n=9, government n=4	Delphi study	44 humanistic KPI's developed. These are similar to person-centred KPI's but read more as statements. Highlights the lack of person-centred KPI's. No patients or carers were involved in development despite this being the focus of need.
Johnson et al. 2006	Reports the development of a reporting tool to enhance nursing quality improvement efforts		Discussion paper	Discusses the structure of committees in this Magnet hospital designed to drive continuous improvement change. Multi-disciplinary professionals in specific committees to provide input on decisions affecting relevant areas of interest. Identifies positive communication across the hospital and nursing staff. Dashboards used to display KPI data. KPI's updated annually or more often if needed. Committees determine KPI's, method and frequency of monitoring, analysis of data and frequency of reporting.
Newhouse 2007	Discussion provide by three nurse leaders on an IoM (2006) report on performance measurement which recommends use of KPI's.		Discussion paper	Highlights how stakeholders need to work together and importance of consensus. How they choose to implement a measure is down to the individual organisation. States 5 aims for nursing executives to enhance quality and 7 implications. Discusses the leadership role of the NQF.
NHS QIS 2005	Report of a pilot designed to develop a means of effectively measuring nursing interventions		Strategic Report	Largest operational group and operating costs. Choice of indicator should be based on what is important to the patient and service. Consideration should be given to how KPI's can be sustained in practice.

Authors	Aim	Participants	Method	Findings and relevance to the study
St Pierre 2006	Discusses employment of a shared decision-making model to empower bedside nurses.		Discussion paper	Suggests nurses are frequently divorced from patient outcomes due to the delay between practice and consequences, quick turnover, lack of self-belief as seen as a team dependent. Highlights the benefits to be gained from a structure of councils designed to engage all levels of nurses and aid communication in relation to improving quality care. Staff nurses actively chair councils at unit level and are trained in leadership and facilitation skills as well as practice improvement methodology, research and evidence-based practice skills. Impacts identified include nurses directly involved in improving care, nurses sense of satisfaction, control and compliance and team working increased. Now aware of gaps in care delivery. Early signs of improved quality of care but too early to note trends.
Lancaster and King. 1999	Describes the use of spider diagrams in a report card as a means of combining information from KPI to assist in decision-making.		Discussion paper	You cannot see trends from spider diagrams. Need to "drill down" if issues are identified. Staffing largest cost and is directly related to outcomes. Use data to argue for resources.
Sinclair 1997	Discusses the use of IT to maximise quality outcomes and decision-making. This was back at the outset of IT and KPI development		Discussion paper	Managers must do more with less. Highlights the need to monitor trends. Defines care pathways. Detail description of the benefits of IT systems but very little on the barriers or issues to use. Emphasis is on the managers to be able to engage with multiple IT programmes as a means of improving productivity, decision-making and management of care, staff, costs.
Newhouse 2006	Describes the generic process for selection and development of KPI's.		Discussion paper	Highlights the four criteria for assessing KPI's. Details a referenced process for selection and development of KPI's. Follows the Donabedian model for KPI development. Identifies multiple sources of information useful to KPI development.
Gokenbach et al. 2011	Discusses the new Magnet model for assessing organisations for accreditation		Discussion paper	Based on the Donabedian model with 5 areas needing evidenced. Highlights the need for staff engagement as a critical component of patient safety and quality care. Discusses Kanter and empowerment. Provides a case study of one hospitals journey to Magnet status. Highlights avenues of communication developed between executive level and clinical level nurses.
Olsen 2011	Ethical paper related to KPI's		Ethics discussion	Raises some issues related to KPI harm. Presents examples of gaming and suggests this will occur as a result of KPI's inappropriate to individual patient needs as nurses try to meet the measure and do what is best for the patient. Discusses Bok's "justified deception". Highlights the need to include clinical nurses in KPI development to ensure KPI's fit in with the reality of practice and avoid gaming.

Authors	Aim	Participants	Method	Findings and relevance to the study
Kurtzman and Jennings 2008b	Describes findings from a study aimed at gaining understanding of the adoption of KPI's into practice with focus on leadership and executive nurses.	60 surveys completed by people visiting web site. 10 leaders of nursing, 10 principle investigators involved in KPI projects, 10 individuals working in hospitals collecting KPI data.	Mixed methods, web based survey and telephone interviews	Champions are needed for the successful implementation and use of KPI's and quality improvement specifically at nurse executive level. Describes the need for strong leadership qualities, knowledge and behaviours for these to flourish. Links behaviours essential to fostering a workplace commitment to performance measurement to Balridge Values. Collecting data is of limited value unless it is analysed, interpreted and acted on. Suggests the latter is challenging and isn't happening. Highlights a need for staff education and training in KPI data use and quality.
Kurtzman and Jennings 2008a	This paper is linked to the study reported above by the same authors.		Discussion paper	Describes the lack of transparency in nursing performance KPI's compared to organisational or medical KPI's due to limited progress in incorporating nurse-specific KPI's into practice. Typically no public reporting of KPI outcomes. Highlights the need to align KPI's into one national database. Also the need for development of IT support, holding nurses to account and rewarding performance for nurses specifically as opposed to rewarding the organisation. Identifies recommendations for KPI use.
Mark and Burleson 1995	Uses a survey to examine the measurement of 5 KPI's across hospitals. Aims to investigate comparability of KPI measures and outcome data.	20 hospitals randomly selected as a subset of a larger longitudinal study of 57 hospitals.	Quantitative paper	Discusses the difficulty of reaching conclusions on outcome data across organisations due to lack of standardised definitions. Explores where the information needed to complete the survey came from and includes documents/polices that describe how the severity of outcomes are decided. Argues the difficulty of identifying nurse-specific KPI's from medical. The focus is on aggregate results and not on individual patient outcomes. Lack of standardisation in outcome measure documentation. Variation in measurement across organisation. Suggest that only medication and falls KPI's provide consistent data.
Robb et al. 2007	Discusses the implementation of a quality monitoring tool		Discussion paper	Identifies the process involved in implementation of a tool which utilises KPI's as a means of monitoring quality. Previously developed at another trust. Defines "surrogate" indicators in addition to structure, process and outcome. Discusses implementation strategies and that KPI's were developed by staff through use of workshops. Presents the original proforma used which includes KPI's however some of these are not KPI's as they are not specific e.g. results of hand washing audits. Focus on the use of audits to collect data. Concludes that the use of KPI's and processes involved in monitoring quality empowers staff to take ownership of quality care.

Authors	Aim	Participants	Method	Findings and relevance to the study
NHS Group 2014	Sets out the indicators that will be used to hold NHS England to account for improvements in outcomes		Web-based policy paper	Indicates the future direction for indicator development in England.
NHS 2014a	Action plan to address the commitment laid out in the plan for health service development in the UK over next five years		Government Report	Includes the empowerment of patients, health of staff, engaging communities. Discusses external bodies to promote and monitor care quality.
NHS 2014b	Sets out a plan for health service development in the UK over the following five years		Government Report	Identifies the need to measure the important aspects of health and calls for openness regarding the data produced. Emphasises the need for team working across healthcare disciplines and inclusion of the patient and family. Integration of hospital and primary care to streamline services. Development of information systems to aid communication internally, externally and with the service user e.g. telemedicine and health apps.
JCAHO 1993	To provide information on performance indicators		Book	Discusses various aspects of performance indicators, what they are, how they should be used, difference between rate-based and sentinel event KPI's and reasons for measuring care among others.
Gold et al. 2005	To explore the extent of patient participation in the planning of care support networks in Ontario.		Qualitative multi-case study	Uses semi-structured interviews, document analysis and observations of strategic meetings to explore patient involvement in provincial care planning. Highlights the lack of patient participation despite positive intents. Reasons given include lack of direction for patient involvement, dominance of established medical centres and competition from other political priorities.
ANA 1995	Presents the Nursing Care Report Card for Acute Care based on the outcome of a safety and quality initiative in America.		Report	Details 21 measures of performance linked to a conceptual or quantifiable aspect of nursing practice. Operationally defines 10 KPI's specific to acute nursing care. Comprehensive description of each in order to promote consistency of data collection and analysis.
Department of Health 2008	Review of the NHS and plan for its development into the next century		Government Report	Calls for high quality care with the patient and public at the centre. Plan to develop a strategy for the introduction of a framework of quality KPI's. Highlights patient safety, experience and effectiveness of care. The need to measure and understand what we do. Includes dashboards and publishing performance results.

Authors	Aim	Participants	Method	Findings and relevance to the study
NHS National Services Scotland 2012	Report on the work of an intensive care society's quality improvement programme		Professional Report	Presents the management process for the use of KPI's. Defines KPI's as "flags". KPI's presented under the headings structure, process and outcome. Not nurse-specific, strategic for ICU setting.
Blozik et al. 2012	Examines how official bodies and healthcare organisations deal with a lack of guidance on the simultaneous development of clinical practice guidelines and quality indicators.	90 members of the Guidelines International Network across 34 countries	Survey	A variety of methods were used for the simultaneous development but approx. 50% lacked formal procedures. Development of KPI's expensive and time consuming therefore it is sensible to develop KPI's at the same time as development of guidance such as that which NICE would produce. Identifies various methods for KPI development.
National Advisory Group on the Safety of Patients in England 2013	Review of NHS England following the Francis Report and others to identify learning and recommendations for action		Independent Review	Targets may take precedence over patient care. Lines of responsibility need to be clear with leadership from the frontline to Prime Minister. All levels of staff should be trained to measure and improve care. Quality care cannot be achieved solely through regulation based on standards. The focus should be on culture. Defines quality in terms of control, improvement and planning. Encourages patient and public involvement with support and training to understand and actively participate at all stages of quality improvement.
Department of Health, Social Services and Public 2011	Presents a ten-year strategy to improvement quality of care in health and social care in Northern Ireland		Government paper	Specifics strategic goals and objectives for service improvement. Emphasises the need to put the service user at the heart of care and health promotion. States what will be done and how we will know it is achieved for each of the ten objectives.
Institute of Medicine 1990	Report on a study commissioned to design a strategy for quality review and assurance in Medicare.		Quality Committee Report	Defines quality, evaluate methods to evaluate quality, also methods to measure, review and assure quality care. Evaluate methods available to correct or prevent identified problems with quality of care.
Mainz 2003	Examines definitions, and classification of KPI's in healthcare		Discussion paper	Classifies using Donabedian model. Highlights difference between rate-based and sentinel event KPI's. Also specifies a difference between generic measures that are relevant for most patients or disease-specific.
Parlour et al. 2013	Report commissioned to evaluate the impact of medication management metrics upon the delivery of nursing and midwifery care	Three locations with 38 sites.	Mixed methods study	Planned observations of practice/audits, sought the opinion of patients and staff, and used an assessment framework to assess the context of practice. Implementation viewed favourably. Needed buy-in from all staff and there is a need ensure that all action plans generated are completed.

Authors	Aim	Participants	Method	Findings and relevance to the study
Koch 1992	Reviews frameworks of quality assurance.		Discussion paper	Frameworks include Donabedian and Lang's Model for Change. Identifies the need for staff to be educated in quality assurance processes. One of the earliest papers found that highlights the growing interest in involving patients in quality assurance and patient satisfaction. States that nursing cannot be represented by standards or indicators as it is "complex, contextual and beyond measurement".
Royal College of Nursing 2009	General information paper on quality in nursing		Professional paper	Defines terms used in quality assurance. Covers data management and discusses data burden. Lays out principles of good data collection.
Artley and Stroh 2001	Authors of one volume of a series on KPI use.		A performance based management handbook	This is volume two of six. It is a factual volume which discusses the establishment of measurement systems. Of relevance is the performance process model presented for the use of KPI's.
Department of Health 2014b	Sets out changes for the health service over the years 2015 to 2020		Policy paper	Lays out strategic structures in England. Discusses innovation and quality outcomes for future focus.
Aiken et al. 2014	Aims to explore if patient to nurse ratios and nurses' educational qualifications affect mortality rates.	422,730 patient records and 26,516 nurse surveys in 300 hospitals in nine European countries	Retrospective observational study	The KPI's assessed were level of nurse staffing and nurse education and inpatient mortality. Findings suggest that higher nursing workload increases inpatient mortality and higher nurse education level decreases inpatient mortality. Using research on the association of these three KPI's could be used to influence practice.
Nicklin and Barton 2007	Reviews a Canadian accreditation council's role in improving care.		Discussion paper	States a relationship between the healthcare work environment and quality of care. Suggests that accreditation increases an organisations uptake of continuous quality improvement initiatives.
Powell et al. 2012	Reports the findings of a study to identify negative consequences of the implementation of a performance management system.	Four sites with 59 staff interviewed. Mix of roles but no patients included.	Qualitative study	Aims to improve performance management systems by gaining better understanding of the negative effects of their use. Lists KPI's in use with good definitions. Actions may be taken to improve targets even if not in a patient's best interests. Even if a patient has refused a treatment it is revisited each time with the patient if it is mandated within a KPI may also be pressure on patient to comply. Time to complete measures reduces time to interact with patient. Health concerns may be given lower priority than KPI's due to limited time. Reduces patient education again due to time.
Schein 2010	Management of organisations in respect of organisational culture		Book	Draws on contemporary research of the time to demonstrate the role of leaders. Considers how different leaders influence organisational management and the influence of culture on change.
JCAHO 1993	Resource for information on use of KPI's in America		Book	Discusses Indicator Development Task, sentinel and rate-based KPI's, aggregation of data and accreditation of healthcare.

Appendix 3: Nurse-sensitive KPI's sourced from the literature

(Only studies including five or more nurse-specific KPI's are listed).

The aim of this list is to provide an accurate overview of the literature reviewed as opposed to a comprehensive list which would risk losing meaning due to the high number of KPI's in use. Many of the KPI's identified may have been cross-referenced from the same source. Therefore, the 'primary cited' KPI's listed here are those which have been developed by the authors or for which the source is unclear. 'Secondary citation' indicates that the authors have identified KPI's based on reviews or research by fellow authors. Additionally, authors used numerous terms to define KPI's, for example "failure to rescue" could include cardiac arrest, respiratory arrest or gastrointestinal (GI) bleed among others. Therefore, similar KPI's are presented under broad descriptive headings. Unfortunately, this means the essence or specificity of the measure is lost but it does illustrate the breadth of indicators in use in nursing practice. This list also includes KPI's identified from the grey literature to present a picture of the information that is currently available and to help set the use of KPI's in context.

	Author	Burston *et al.* 2013	Griffiths *et al.* 2008	Zeitlin *et al.* 2003	Vasse *et al.* 2012**	Van Nie *et al.* 2010	Tregunno *et al.* 2004	Tropea *et al.* 2011	Smith 2007	Stricker *et al.* 2009
Primary citation - original or primary source unclear				√	√	√	√	√		√
Secondary citation - KPI's with primary reference noted		√	√						√	
Indicator	**Count**									
Pressure ulcer*	23	√	√			√		√	√	
Failure to rescue*	14	√	√						√	
Falls*	19	√	√			√		√	√	
Medication errors*	11	√	√							
Central line infection*	7	√	√						√	
Vascular access infection	3	√								
Vascular access device incidents	2		√							
Vascular access infiltration*	5	√	√							
Vascular access thrombosis	2	√								
Intravenous fluid administration	2									
Pneumonia*	12	√	√						√	
Respiratory infection	2	√								
Urinary infection	12	√	√						√	

Urinary catheter/ostomy	5		√							
Continence	7		√			√		√		
Bowel management/ostomy	2									
Deep vein thrombosis	5	√	√							
CNS complications	3	√								
Vital sign status	8									
Metabolic derangement	5	√								
Post-operative infection*	5	√	√							
Post-operative complications	3		√					√		
C. difficile	2		√							
MRSA	2		√							
Wound care	2									
Healthcare acquired infection surveillance system*	8		√							
Functional status	8	√		√				√		
Sleep/rest	2									
Self-care	9	√								
Nutritional assessment/screening*	9		√					√		
Protected meal times policy implemented	1		√							
Patient characteristics*	2									
Patient complaints	4	√	√							
Patient satisfaction*	15	√	√			√	√			
Next-of-kin satisfaction*	3									√
Confidence and trust	4		√							
Practice environment/perceived quality	5		√							√
Cleanliness	2		√							
Hand hygiene	2									
Thrombophlebitis	2	√	√							
Fluid overload	1	√								

| | | |

Nurse perception of quality of care	3								
Understaffing (compared to staffing plan)	2		√						
Emergency equipment/drugs	2		√						
Emergency care	2		√						
Injuries to staff	4		√						
Interprofessional relations	9		√						
Nurse knowledge of condition and treatment	7		√		√				√
Recod keeping/recording systems	7		√		√				
Staff intent to leave	1		√						
Nurse turnover	13		√				√	√	
Staff development*	9		√		√		√		
Years of experience*	7								
RN education level	7								
Induction	1		√						
Appraisals	1		√						
Workload*	15		√				√	√	
Leadership*	4		√						
Organisational factors of the nursing practice environment (e.g. culture, autonomy, practice control)	10							√	
Care planning/assessment	10		√		√		√		
Hospital admission/readmission	8		√				√		
Length of stay*	7	√	√						
Discharge from caseload	3		√						
Discharge planning/case management process*	5		√				√		
Waiting time for nursing care	5						√		
Births without medical intervention	1			√					
Post-partum depression	2			√					
Births attended by a midwife	1			√					

Breast feeding	2	√				
Carers offered respite or short-care break	1		√			
Designated nurse	2		√			
Timely blood culture collection in patients with pneumonia	1					
Timely antibiotic administration to patients with pneumonia	1					
Time to triage	2			√		
Access to primary care in the community/referrals	4			√		
Current medications*	5				√	
Cervical screening	3					
Oxygen therapy*	1					
Nebuliser and inhalers use and administration	1					
Unplanned extubation	1					
Tracheostomy or endotrachel tube care	1					
Consistent delivery of nursing/midwifery care against identified need, patient's sense of safety whilst under the care of N/M, Patient’s confidence in the knowledge and skills of the nurse/midwife	2					
Time spent by N/M with the patient, respect from the N/M for patient's preferences and choice, Nurse/midwife’s support for patients to care for themselves, where appropriate	2					
N/M understanding of what is important to the patient, patient's involvement in decisions made about their N/M care	4					
Cast care	1					
Venepuncture and/or cannulation	1					
Care of patients in isolation	1					
Patient education/health promotion	8					

Appendix 3 (continued - additional authors 1)

	Author	Talungchit *et al.* 2013**	Pekkarinen *et al.* 2008	Adam *et al.* 2011	Kröger *et al.* 2007	Lodewijckx *et al.* 2012	Heslop & Lu 2014	Van den Heede *et al.* 2007	Foulkes 2011
Primary citation - original or primary source unclear		√	√	√	√	√			
Secondary citation - KPI's with primary reference noted							√	√	√
Indicator	**Count**								
Pressure ulcer*	23		√				√	√	√
Failure to rescue*	14	√					√	√	√
Falls*	19						√	√	√
Medication errors*	11		√				√	√	
Central line infection*	7							√	
Vascular access infection	3						√		
Vascular access device incidents	2						√		
Vascular access infiltration*	5						√	√	
Vascular access thrombosis	2						√		
Intravenous fluid administration	2					√			
Pneumonia*	12						√	√	√
Respiratory infection	2								
Urinary infection	12						√	√	
Urinary catheter/ostomy	5	√						√	
Continence	7								
Bowel management/ostomy	2								
Deep vein thrombosis	5							√	
CNS complications	3							√	
Vital sign status	8	√		√			√		
Metabolic derangement	5	√		√				√	
Post-operative infection*	5							√	

Post-operative complications	3						√	
C. difficile	2							
MRSA	2							
Wound care	2							
Healthcare acquired infection surveillance system*	8					√	√	√
Functional status	8						√	
Sleep/rest	2							
Self-care	9			√		√	√	
Nutritional assessment/screening*	9						√	
Protected meal times policy implemented	1							
Patient characteristics*	2					√	√	
Patient complaints	4						√	
Patient satisfaction*	15					√	√	√
Next-of-kin satisfaction*	3							
Confidence and trust	4							
Practice environment/perceived quality	5						√	
Cleanliness	2							
Hand hygiene	2							
Thrombophlebitis	2							
Fluid overload	1							
Iatrogenic lung collapse	1							
Pulmonary embolis	3						√	
Atelectasis	1							
Activities of daily living index*	3							
Pain scores*	13					√	√	√
Health status/quality of life	4	√						
Vaccination rates	5	√						
Allergies recorded	1							

Risk assessments	5			√					
Assessment and management of social situation	4				√				
Accidents/incidents	4								
Symptom manager index*	7				√		√		
Symptom resolution	4					√			
Physical and mental health change scores	3			√					
Patient absconding or lost	1								
Physical/sexual assault	3								
Restraint*	8					√	√		
Psychological well-being	7			√					
Self-harm risk assessment	2			√					
Cognitive screening	3								
Confusion/delirium	2								
Staff satisfaction and wellbeing	11					√	√	√	
Nurse to patient ratio	4		√				√		
Staffing levels/skill mix*	13					√	√	√	
Sickness rates	3						√		
Smoking cessation advice	7			√	√		√		
Staffing bank/agency/overtime utilisation	7						√		
Perception of adequate staffing	2						√		
Nurse perception of quality of care	3						√	√	
Understaffing (compared to staffing plan)	2						√		
Emergency equipment/drugs	2								
Emergency care	2	√							
Injuries to staff	4					√	√		
Interprofessional relations	9					√	√		
Nurse knowledge of condition and treatment	7								
Recod keeping/recording systems	7					√			

Staff intent to leave	1						
Nurse turnover	13				√	√	
Staff development*	9				√	√	
Years of experience*	7				√	√	
RN education level	7				√	√	√
Induction	1						
Appraisals	1						
Workload*	15	√			√	√	√
Leadership*	4				√	√	
Organisational factors of the nursing practice environment (e.g. culture, autonomy, practice control)	10	√			√	√	√
Care planning/assessment	10				√		
Hospital admission/readmission	8				√	√	
Length of stay*	7				√	√	
Discharge from caseload	3						
Discharge planning/case management process*	5						
Waiting time for nursing care	5		√		√		
Births without medical intervention	1						
Post-partum depression	2						
Births attended by a midwife	1						
Breast feeding	2						
Carers offered respite or short-care break	1						
Designated nurse	2						
Timely blood culture collection in patients with pneumonia	1					√	
Timely antibiotic administration to patients with pneumonia	1					√	
Time to triage	2		√				
Access to primary care in the community/referrals	4						

Current medications*	5			
Cervical screening	3	√		
Oxygen therapy*	1		√	
Nebuliser and inhalers use and administration	1		√	
Unplanned extubation	1			√
Tracheostomy or endotrachel tube care	1			
Consistent delivery of nursing/midwifery care against identified need, patient's sense of safety whilst under the care of N/M, Patient's confidence in the knowledge and skills of the nurse/midwife	2			
Time spent by N/M with the patient, respect from the N/M for patient's preferences and choice, Nurse/midwife's support for patients to care for themselves, where appropriate	2			
N/M understanding of what is important to the patient, patient's involvement in decisions made about their N/M care	4			
Cast care	1			
Venepuncture and/or cannulation	1			
Care of patients in isolation	1			
Patient education/health promotion	8			

Appendix 3 (continued additional authors 2)

	Author	Corrigan & Kurtzman 2007	Pazargadi *et al.* 2008	Hedges *et al.* 1999	McCance *et al.* 2012	Sermeus *et al.* 2008	Dubois *et al.* 2013	Noh & Lee 2014	Idvall *et al.* 1997**
Primary citation - original or primary source unclear			√	√	√				
Secondary citation - KPI's with primary reference noted		√				√	√	√	√
Indicator	**Count**								
Pressure ulcer*	23	√	√		√	√	√	√	√
Failure to rescue*	14	√					√		
Falls*	19	√			√		√	√	√
Medication errors*	11						√		√
Central line infection*	7	√							
Vascular access infection	3						√		
Vascular access device incidents	2								
Vascular access infiltration*	5		√						
Vascular access thrombosis	2								
Intravenous fluid administration	2					√			
Pneumonia*	12	√							
Respiratory infection	2						√		
Urinary infection	12						√		
Urinary catheter/ostomy	5	√							√
Continence	7					√	√	√	√
Bowel management/ostomy	2							√	√
Deep vein thrombosis	5								
CNS complications	3								
Vital sign status	8				√	√		√	
Metabolic derangement	5								

Post-operative infection*	5									
Post-operative complications	3									
C. difficile	2									
MRSA	2									
Wound care	2					√			√	
Healthcare acquired infection surveillance system*	8				√			√		√
Functional status	8				√	√		√		
Sleep/rest	2								√	
Self-care	9				√	√		√		
Nutritional assessment/screening*	9				√	√		√	√	√
Protected meal times policy implemented	1									
Patient characteristics*	2									
Patient complaints	4							√		
Patient satisfaction*	15	√		√		√			√	√
Next-of-kin satisfaction*	3			√				√		
Confidence and trust	4				√					
Practice environment/perceived quality	5							√		
Cleanliness	2							√		
Hand hygiene	2				√					
Thrombophlebitis	2									
Fluid overload	1									
Iatrogenic lung collapse	1									
Pulmonary embolis	3									
Atelectasis	1									
Activities of daily living index*	3									
Pain scores*	13				√				√	√
Health status/quality of life	4					√				
Vaccination rates	5									

Allergies recorded	1									
Risk assessments	5				√					
Assessment and management of social situation	4			√	√					√
Accidents/incidents	4						√			
Symptom manager index*	7				√		√	√		
Symptom resolution	4									
Physical and mental health change scores	3									
Patient absconding or lost	1									
Physical/sexual assault	3						√			
Restraint*	8	√					√			
Psychological well-being	7						√	√		
Self-harm risk assessment	2									
Cognitive screening	3						√	√		
Confusion/delirium	2					√				
Staff satisfaction and wellbeing	11		√				√	√		
Nurse to patient ratio	4		√				√			
Staffing levels/skill mix*	13	√					√			
Sickness rates	3						√			
Smoking cessation advice	7	√								
Staffing bank/agency/overtime utilisation	7						√			
Perception of adequate staffing	2									
Nurse perception of quality of care	3									
Understaffing (compared to staffing plan)	2									
Emergency equipment/drugs	2									
Emergency care	2									
Injuries to staff	4						√			
Interprofessional relations	9			√			√			
Nurse knowledge of condition and treatment	7				√					

Recod keeping/recording systems	7			√					
Staff intent to leave	1								
Nurse turnover	13	√					√		
Staff development*	9		√						
Years of experience*	7		√				√		
RN education level	7		√				√		
Induction	1								
Appraisals	1								
Workload*	15	√	√				√		
Leadership*	4								
Organisational factors of the nursing practice environment (e.g. culture, autonomy, practice control)	10	√	√				√		
Care planning/assessment	10			√		√	√		
Hospital admission/readmission	8						√		√
Length of stay*	7			√			√		
Discharge from caseload	3			√					
Discharge planning/case management process*	5			√	√		√		
Waiting time for nursing care	5		√		√				
Births without medical intervention	1								
Post-partum depression	2								
Births attended by a midwife	1								
Breast feeding	2								
Carers offered respite or short-care break	1								
Designated nurse	2								
Timely blood culture collection in patients with pneumonia	1								
Timely antibiotic administration to patients with pneumonia	1								
Time to triage	2								

Access to primary care in the community/referrals	4		√			√		
Current medications*	5			√			√	
Cervical screening	3							
Oxygen therapy*	1							
Nebuliser and inhalers use and administration	1							
Unplanned extubation	1							
Tracheostomy or endotrachel tube care	1			√				
Consistent delivery of nursing/midwifery care against identified need, patient's sense of safety whilst under the care of N/M, Patient's confidence in the knowledge and skills of the nurse/midwife	2		√			√		
Time spent by N/M with the patient, respect from the N/M for patient's preferences and choice, Nurse/midwife's support for patients to care for themselves, where appropriate	2		√					
N/M understanding of what is important to the patient, patient's involvement in decisions made about their N/M care	4		√			√		
Cast care	1			√				
Venepuncture and/or cannulation	1			√				
Care of patients in isolation	1			√				
Patient education/health promotion	8					√	√	√

Appendix 3 (continued - additional authors 3)

	Author	Kavanagh *et al.* 2012	Shuldham *et al.* 2009	Duffield *et al.* 2011	Houser 2003	Arah *et al.* 2003**	Barnsley *et al.* 2005**	Shield *et al.* 2003**	Idvall *et al.* 1999
Primary citation - original or primary source unclear					√		√	√	√
Secondary citation - KPI's with primary reference noted		√	√	√		√			
Indicator	**Count**								
Pressure ulcer*	23	√	√	√		√			
Failure to rescue*	14	√	√	√	√				
Falls*	19	√	√	√	√				
Medication errors*	11				√				
Central line infection*	7	√							
Vascular access infection	3								
Vascular access device incidents	2								
Vascular access infiltration*	5								
Vascular access thrombosis	2								
Intravenous fluid administration	2								
Pneumonia*	12	√	√	√	√				
Respiratory infection	2								
Urinary infection	12	√		√	√		√		
Urinary catheter/ostomy	5								
Continence	7								
Bowel management/ostomy	2								
Deep vein thrombosis	5		√	√					
CNS complications	3			√					
Vital sign status	8					√	√		
Metabolic derangement	5			√					
Post-operative infection*	5	√		√					

Post-operative complications	3							
C. difficile	2							
MRSA	2							
Wound care	2							
Healthcare acquired infection surveillance system*	8							
Functional status	8							
Sleep/rest	2							√
Self-care	9						√	
Nutritional assessment/screening*	9							
Protected meal times policy implemented	1							
Patient characteristics*	2							
Patient complaints	4							
Patient satisfaction*	15							√
Next-of-kin satisfaction*	3							
Confidence and trust	4						√	
Practice environment/perceived quality	5							√
Cleanliness	2							
Hand hygiene	2							
Thrombophlebitis	2							
Fluid overload	1							
Iatrogenic lung collapse	1							
Pulmonary embolis	3		√					
Atelectasis	1							
Activities of daily living index*	3							
Pain scores*	13							√
Health status/quality of life	4							
Vaccination rates	5				√	√		
Allergies recorded	1							

Risk assessments	5							√		
Assessment and management of social situation	4									
Accidents/incidents	4									
Symptom manager index*	7									
Symptom resolution	4								√	
Physical and mental health change scores	3									
Patient absconding or lost	1									
Physical/sexual assault	3									
Restraint*	8							√		
Psychological well-being	7							√		
Self-harm risk assessment	2									
Cognitive screening	3									
Confusion/delirium	2									
Staff satisfaction and wellbeing	11			√						
Nurse to patient ratio	4									
Staffing levels/skill mix*	13	√		√					√	
Sickness rates	3									
Smoking cessation advice	7						√			
Staffing bank/agency/overtime utilisation	7	√	√	√	√					
Perception of adequate staffing	2									
Nurse perception of quality of care	3									
Understaffing (compared to staffing plan)	2									
Emergency equipment/drugs	2						√			
Emergency care	2									
Injuries to staff	4									
Interprofessional relations	9			√	√				√	
Nurse knowledge of condition and treatment	7							√	√	
Recod keeping/recording systems	7						√	√		

Staff intent to leave	1									
Nurse turnover	13	√			√	√				
Staff development*	9					√			√	
Years of experience*	7				√	√				
RN education level	7									
Induction	1									
Appraisals	1									
Workload*	15	√		√	√					
Leadership*	4					√				
Organisational factors of the nursing practice environment (e.g. culture, autonomy, practice control)	10	√			√					
Care planning/assessment	10								√	√
Hospital admission/readmission	8	√								
Length of stay*	7					√				
Discharge from caseload	3									
Discharge planning/case management process*	5									
Waiting time for nursing care	5									
Births without medical intervention	1									
Post-partum depression	2								√	
Births attended by a midwife	1									
Breast feeding	2						√			
Carers offered respite or short-care break	1									
Designated nurse	2								√	
Timely blood culture collection in patients with pneumonia	1									
Timely antibiotic administration to patients with pneumonia	1									
Time to triage	2									
Access to primary care in the community/referrals	4								√	

Current medications*	5			√
Cervical screening	3	√	√	
Oxygen therapy*	1			
Nebuliser and inhalers use and administration	1			
Unplanned extubation	1			
Tracheostomy or endotrachel tube care	1			
Consistent delivery of nursing/midwifery care against identified need, patient's sense of safety whilst under the care of N/M, Patient's confidence in the knowledge and skills of the nurse/midwife	2			
Time spent by N/M with the patient, respect from the N/M for patient's preferences and choice, Nurse/midwife's support for patients to care for themselves, where appropriate	2			√
N/M understanding of what is important to the patient, patient's involvement in decisions made about their N/M care	4			√
Cast care	1			
Venepuncture and/or cannulation	1			
Care of patients in isolation	1			
Patient education/health promotion	8	√	√	√

Appendix 3 (continued - additional authors 4)

	Author	Ingersoll *et al.* 2000**	Maben *et al.* 2012	NHS QIS 2005	Adams and Iseler 2014	Johnston et al. 2006	Shelton et al. 2015
Primary citation - original or primary source unclear		√		√		√	
Secondary citation - KPI's with primary reference noted			√		√		
Indicator	**Count**						
Pressure ulcer*	23		√	√	√	√	
Failure to rescue*	14				√		
Falls*	19		√		√	√	
Medication errors*	11		√		√	√	√
Central line infection*	7		√			√	
Vascular access infection	3					√	
Vascular access device incidents	2					√	
Vascular access infiltration*	5		√			√	
Vascular access thrombosis	2					√	
Intravenous fluid administration	2						
Pneumonia*	12		√				
Respiratory infection	2						
Urinary infection	12		√	√			
Urinary catheter/ostomy	5						
Continence	7						
Bowel management/ostomy	2						
Deep vein thrombosis	5						
CNS complications	3						
Vital sign status	8						
Metabolic derangement	5						

Post-operative infection*	5							
Post-operative complications	3							
C. difficile	2				√			
MRSA	2				√			
Wound care	2							
Healthcare acquired infection surveillance system*	8		√			√		
Functional status	8	√						
Sleep/rest	2							
Self-care	9	√						
Nutritional assessment/screening*	9			√				
Protected meal times policy implemented	1							
Patient characteristics*	2							
Patient complaints	4							
Patient satisfaction*	15	√				√	√	
Next-of-kin satisfaction*	3							
Confidence and trust	4	√						
Practice environment/perceived quality	5							
Cleanliness	2							
Hand hygiene	2				√			
Thrombophlebitis	2							
Fluid overload	1							
Iatrogenic lung collapse	1							
Pulmonary embolis	3							
Atelectasis	1							
Activities of daily living index*	3							
Pain scores*	13		√	√				
Health status/quality of life	4	√						
Vaccination rates	5				√			
Allergies recorded	1							

Risk assessments	5					
Assessment and management of social situation	4					
Accidents/incidents	4		√			
Symptom manager index*	7					
Symptom resolution	4	√				√
Physical and mental health change scores	3					
Patient absconding or lost	1					
Physical/sexual assault	3		√			
Restraint*	8		√			√
Psychological well-being	7	√				
Self-harm risk assessment	2					
Cognitive screening	3					
Confusion/delirium	2					
Staff satisfaction and wellbeing	11	√	√			
Nurse to patient ratio	4					
Staffing levels/skill mix*	13		√	√		
Sickness rates	3					
Smoking cessation advice	7					
Staffing bank/agency/overtime utilisation	7					√
Perception of adequate staffing	2					
Nurse perception of quality of care	3		√			
Understaffing (compared to staffing plan)	2					
Emergency equipment/drugs	2					
Emergency care	2					
Injuries to staff	4					
Interprofessional relations	9	√				
Nurse knowledge of condition and treatment	7	√				
Recod keeping/recording systems	7			√		√

Staff intent to leave	1				
Nurse turnover	13	√	√	√	√
Staff development*	9				√
Years of experience*	7	√			
RN education level	7	√			√
Induction	1				
Appraisals	1				
Workload*	15	√	√	√	
Leadership*	4				
Organisational factors of the nursing practice environment (e.g. culture, autonomy, practice control)	10				
Care planning/assessment	10	√			
Hospital admission/readmission	8	√			
Length of stay*	7				
Discharge from caseload	3	√			
Discharge planning/case management process*	5				
Waiting time for nursing care	5				
Births without medical intervention	1				
Post-partum depression	2				
Births attended by a midwife	1				
Breast feeding	2				
Carers offered respite or short-care break	1				
Designated nurse	2				
Timely blood culture collection in patients with pneumonia	1				
Timely antibiotic administration to patients with pneumonia	1				
Time to triage	2				
Access to primary care in the community/referrals	4				
Current medications*	5	√			

Cervical screening	3			
Oxygen therapy*	1			
Nebuliser and inhalers use and administration	1			
Unplanned extubation	1			
Tracheostomy or endotrachel tube care	1			
Consistent delivery of nursing/midwifery care against identified need, patient's sense of safety whilst under the care of N/M, Patient's confidence in the knowledge and skills of the nurse/midwife	2			
Time spent by N/M with the patient, respect from the N/M for patient's preferences and choice, Nurse/midwife's support for patients to care for themselves, where appropriate	2			
N/M understanding of what is important to the patient, patient's involvement in decisions about their N/M care	4	√		
Cast care	1			
Venepuncture and/or cannulation	1			
Care of patients in isolation	1			
Patient education/health promotion	8	√	√	

*Failure to rescue also includes: Upper GI bleed, mortality, sepsis, shock, cardiac/respiratory arrest, cardiac/pulmonary failure, deterioration, complications, unplanned extubation, renal failure

*Falls also includes: falls with injury, prevention behaviour, mobility

*Pneumonia also includes: ventilator acquired, aspiration pneumonia

*Nutritional assessment/screening also includes: malnutrition, dehydration, alimentation or supplements, weight loss

*Restraint also includes: prevalence, restraint application duration, documentation, chemical & physical

*Post-operative infection also includes: surgical wound infection

*Healthcare acquired infection surveillance system also includes: general hospital acquired infections

*Central line infection also includes: bloodstream

*Pain score also includes: pain assessment, pain control and patient satisfaction with control

*Thrombophlebitis also includes: vascular access thrombophlebitis

*Pressure ulcer also includes: assessment/planning

*Vascular access infiltration also includes: cannula infiltration

*Next-of-kin satisfaction also includes: consideration of next of kin needs and emotional support, skills and competence of nurses, information-(ease of getting, honesty, completeness, consistency), inclusion and support in decision-making, control over care

*Patient satisfaction also includes: with pain management, quality of care, nursing care, outcomes of care, experience of communication, concern and caring for patient

*Symptom manager index also includes: symptom management, assessment

*Staff development also includes: record of training and updating

*Workload also includes: patient dependency/acuity, hours of nursing care per patient day, time pressure, nursing practice

*Length of stay also includes: patient turnover

*Staffing levels/skill mix also includes: proportion of licensed nursing staff to all nursing staff, prop of RNs to total staff, prop of RNs to all licensed staff

*Discharge planning/case management process also includes: community referral/participation, discharge care plan, discharge assessment

*Patient characteristics also includes: age, severity of illness, co-morbidities

*Years of experience also includes: experience in a specialised area

*Leadership also includes: organisational support for nurses, nurse autonomy

* Current medications also includes: medication changes, sedative use, medication management/administration

*Medication errors also includes inappropriate drug use

*Oxygen therapy includes: administration, patient education, pulse oximetry

** Literature also including non-nurse-specific KPI's

Idvall *et al.* 1997 Additional information not specifically KPI nurse-sensitive

Talungchit *et al.* 2013 Additional KPI's identified in this paper but of a medical nature

Clarke *et al*. 2003. Present 53 primary cited KPI's specific to end-of-life care in ICU and not represented above. Therefore not included due to the number.

Dancet *et al*. 2013 Present 24 KPI's specific to infertility care and are not represented above.

Arah *et al*. 2003

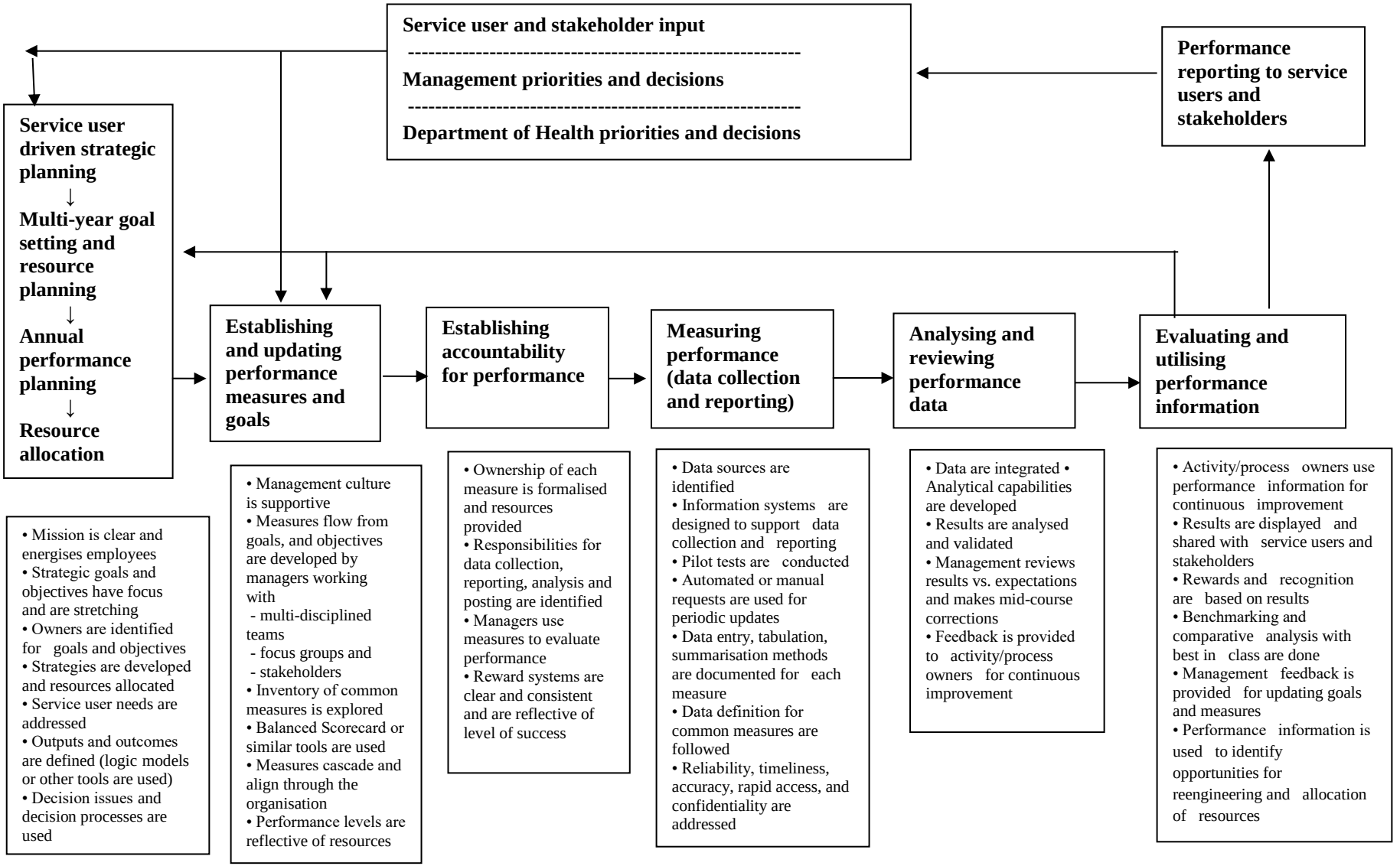
Barnsley *et al*. 2005

Vasse *et al.* 2012

Shield *et al*. 2003 also includes multiple NS KPI's not identified elsewhere therefore not included

Ingersoll *et al.* 2000 also includes multiple NS KPI's not identified elsewhere therefore not included (query exclude KPI's of which less than 3 appear)

Appendix 4: Flowchart for the KPI Process Model (adapted from NPR Performance Management Process Model)



Appendix 5: Questionnaire

Study Title: How does the use of key performance indicators influence nursing and midwifery practice?

Working definition of a KPI for the purpose of this study: "High-level snapshots of a business or organisation based on specific predefined measures" (Avinash 2010, p.1).

Organisational profile

1. Please indicate the organisation's location.

☐ England

☐ Ireland

☐ Northern Ireland

☐ Scotland

☐ Wales

2. What size of a population does your organisation cover?

Please state approximate number below.

3. What population areas do you cover?

☐ Rural
☐ Urban
☐ Both

4. Which of the following services do you provide?

☐ Acute
☐ Community
☐ Both

5. Please indicate the areas of practice in the organisation.

☐ adult

☐ midwifery

☐ paediatrics

☐ learning/intellectual disability

☐ community

☐ mental health

6. Please indicate the total number of staff employed.

☐ under 2000
☐ 2001-5000
☐ 5001-10000
☐ 10001-15000
☐ 15001-20000
☐ over 20000

7. Please indicate the approximate number of nurses employed.

☐ under 1000
☐ 1001-3000
☐ 3001-5000
☐ 5001-7000
☐ 7001-9000
☐ over 9000

8. Please indicate the number of midwives employed.

☐ under 1000
☐ 1001-3000
☐ 3001-5000
☐ over 5000

Organisational Indicators

9. The following KPI's are some of the most frequently cited organisational KPI's in the literature. Please indicate if you use these in practice.

KPI	YES	NO
Agency and nurse bank usage	☐	☐
Number of nursing vacancies	☐	☐
Number of nursing absences	☐	☐
Incidence of complaints specifically related to nursing care	☐	☐

For the KPI's that are used, please answer the questions below:

10. How is the data collected?
Tick all that apply.

	Computer	Paper	Both
Agency/bank usage	☐	☐	☐
Vacancies	☐	☐	☐
Absences	☐	☐	☐
Complaints	☐	☐	☐

11. How frequently is the data collected?
Tick all that apply.

	Monthly or more often	Bi-monthly	Quarterly or less frequently
Agency/bank usage	☐	☐	☐
Vacancies	☐	☐	☐
Absences	☐	☐	☐
Complaints	☐	☐	☐

12. Who collects this data?
Tick all that apply.

	Clinical staff	Admin/clerical	Managerial staff
Agency/bank usage	☐	☐	☐
Vacancies	☐	☐	☐
Absences	☐	☐	☐
Complaints	☐	☐	☐

13. Who collates/analyses this data?
Tick all that apply.

	Clinical staff	Admin/clerical	Managerial staff	Other
Agency/bank usage	☐	☐	☐	☐
Vacancies	☐	☐	☐	☐
Absences	☐	☐	☐	☐
Complaints	☐	☐	☐	☐

14. Do you collect data on any other organisational KPI's?
Please list in the box below.

15. The following KPI's are some of the most frequently cited clinical KPI's reported in the literature. Please indicate which are used in your organisation.

KPI	YES	NO
Incidence of pressure ulcers	☐	☐
Assessment of nutritional requirements	☐	☐
Incidence of falls	☐	☐
Compliance with hand hygiene	☐	☐
Incidence of medication errors	☐	☐
Compliance with completion of national early warning scores (NEWS)	☐	☐
Prevalence of infections/HCAI (any of the following: urinary catheters, ventilator pneumonia, central lines, MRSA, C Difficile)	☐	☐

For the KPI's that are used, please answer the questions below:

16. How is the data collected? Tick all that apply.

	Paper	Computer	Both
Pressure ulcers	☐	☐	☐
Nutritional assessment	☐	☐	☐
Falls	☐	☐	☐
Hand hygiene	☐	☐	☐
Medication errors	☐	☐	☐
NEWS	☐	☐	☐
HCA infections	☐	☐	☐

17. How frequently is the data collected? Tick all that apply.

	Monthly or more often	Bi-monthly	Quarterly or less frequently
Pressure ulcers	☐	☐	☐
Nutritional assessment	☐	☐	☐
Falls	☐	☐	☐
Hand hygiene	☐	☐	☐
Medication errors	☐	☐	☐
NEWS	☐	☐	☐
HCA infections	☐	☐	☐

18. Who collects this data?
Tick all that apply.

	Clinical staff	Admin/ clerical	Manager
Pressure ulcers	☐	☐	☐
Nutritional assessment	☐	☐	☐
Falls	☐	☐	☐
Hand hygiene	☐	☐	☐
Medication errors	☐	☐	☐
NEWS	☐	☐	☐
HCA infections	☐	☐	☐

19. Who collates/analyses this data?
Tick all that apply.

	Clinical staff	Admin/ clerical	Manager	Other
Pressure ulcers	☐	☐	☐	☐
Nutritional assessment	☐	☐	☐	☐
Falls	☐	☐	☐	☐
Hand hygiene	☐	☐	☐	☐
Medication errors	☐	☐	☐	☐
NEWS	☐	☐	☐	☐
HCA infections	☐	☐	☐	☐

20. Do you collect data on any other clinical KPI's?
Please list in the box below.

Patient experience indicators

21. Do you use any specific KPI's that reflect the patient experience?

YES ☐ NO ☐

If yes, please include the KPI's in the box below.

Field specific indicators.

22. Do you collect any KPI's specific to the following fields of practice?

	YES	NO
Mental health	☐	☐
Learning/intellectual disability	☐	☐
Children's	☐	☐
Midwifery	☐	☐
Community	☐	☐

If yes, please indicate what KPI's you are using?

Mental health

Learning/intellectual disability

Children's

Midwifery

Other (e.g. intensive care specific, palliative care specific)

KPI operational processes

23. What factors influence selection of KPI's for use within your organisation?

24. How are clinical nurses and midwives involved in KPI's?

25. What system/s do you use to present your data?
Tick all that apply.

☐ Manual
☐ Balanced scorecard (strategic system aligning organisational vision and goals to performance; KPI's sit within this)
☐ Standard databases
☐ Custom designed IT system (for example dashboards)
☐ Other

If other, please describe in the box below.

26. How is the KPI data reported within your organisation?

27. What mechanisms are in place to support/encourage action on KPI data to improve practice?

28. Can you provide one example of when data generated from use of a KPI was used to improve practice?

29. Which indicator do you feel is the most valuable for determining the quality of nursing and midwifery care across your organisation and why?

30. Would you be interested in participating in phase two of this research?

YES ☐ NO ☐

If you would be interested in participation in phase 2 please insert your name and email address below.

Name:

Email address:

This personal information will only be known to the researcher and supervisory team and used solely to contact you to discuss participation in phase 2.

Thank you for your participation in this research.

We greatly appreciate your time and effort in completing this questionnaire.

Appendix 6: First iteration of the phase one questionnaire

Questionnaire

This questionnaire is designed to explore the use of high level performance and care quality indicators that are nurse-sensitive; those indicators that capture care or its outcomes most affected by nursing care.

These indicators are known by many terms including:

- Key performance indicators
- Quality indicators
- Nurse-sensitive indicators
- Clinical quality indicators
- Metrics
- Health care quality indicators

For the purpose of this questionnaire the term Key Performance Indicators (KPI's) will be used. Many definitions specify quantitative measures but this may not be pertinent to capture some of the more nebulous aspects of nursing care. The definition of a high level indicator for the purpose of this questionnaire is that they:

> *Are tools that measure care or its outcomes most affected by nursing practice and that help decision makers identify progress and set action plans, if necessary, to meet organisational goals. Their use aims to improve quality of care and the patient experience.*

To ensure clarity of understanding indicators are <u>not</u> audits, care bundles, care pathways, benchmarks or minimum standards although KPI's may be found within these. KPI's "can only serve as flags or pointers, which summarise and prompt questions about complex systems of clinical care and they must be understood in that context" (NHS National Services Scotland 2012 p2)

You will be asked to provide information under four headings:

- Section 1. Demographic information

- Section 2. Frequently cited KPI's:
  - How they are collected
  - Frequency of collection
  - How they are reported

- Section 3. Field specific (NMC 2010) indicators and areas of specialism.

- Section 4. Your opinions related to performance and care quality indicators.

Section 1. **Demographic information**

This section asks for general information about your organisation and the KPI's used.

Please indicate the organisation's location.
☐ England
☐ Northern Ireland
☐ Scotland
☐ Wales

Please indicate the areas of practice in the organisation.
☐ adult
☐ midwifery
☐ paediatrics
☐ learning disability
☐ community
☐ mental health

Please indicate the approximate number of nurses employed.
☐ under 1000
☐ 1001-2000
☐ 2001-3000
☐ 3001-4000
☐ 4001-5000
☐ 5001-6000
☐ 6001-7000
☐ 7001-8000
☐ over 8000

Please indicate the number of midwives employed.
☐ under 1000
☐ 1001-2000
☐ 2001-3000
☐ 3001-4000
☐ 4001-5000
☐ over 5000

Please indicate the approximate number of staff employed.
☐ under 2000
☐ 2001-3000
☐ 3001-4000
☐ 4001-5000
☐ 5001-6000
☐ 6001-7000
☐ 7001-8000
☐ 8001-9000

☐ over 9000

What size of population does your organisation provide care for?
Please state below

Please indicate treatment numbers for 14/15 if applicable:
Inpatient

Outpatient

Non-elective

Births

Has your organisation undergone a merger in the past five years?
Yes No

How long has the current Director of Nursing been in post?
☐ Less than five years
☐ Five –ten years
☐ More than ten years

Section 2. Frequently Cited Indicators

The following ten KPI's are some of the most frequently cited in the literature. Can you indicate if you apply these to practice and if so answer the related questions.

1. Agency and nurse bank usage?
Yes No

How is this data collected?
Tick all that apply.

☐ Review of nursing documents
☐ Local audits

☐ Rostering schedules

How frequently is this data collected?
Tick all that apply.

☐ Weekly
☐ Fortnightly
☐ Monthly
☐ Less frequently than monthly

How is this data reported?
Tick all that apply.

☐ Excel spreadsheets
☐ Dashboards
☐ Balanced scorecards
☐ Custom designed computer system
☐ Ready-made, validated computer measurement tools (e.g. CORE software, Nursing Minimum Data Sets)
☐ Accountability reviews
☐ Report/score cards
☐ Database

2. Staff skill mix ratios?
Yes No

How is this data collected?
Tick all that apply.

☐ Review of nursing and medical documents
☐ Local audits
☐ Rostering schedules

How frequently is this data collected?
Tick all that apply.

☐ Weekly
☐ Fortnightly
☐ Monthly
☐ Less frequently than monthly

How is this data reported?
Tick all that apply.

☐ Excel spreadsheets
☐ Dashboards

☐ Balanced scorecards
☐ Custom designed computer system
☐ Ready-made, validated computer measurement tools (e.g. CORE software, Nursing Minimum Data Sets)
☐ Accountability reviews
☐ Report/score cards
☐ Database

Part 1.
This first part seeks to identify the performance and care quality indicators used in your organisation.

Please tick all that are appropriate.

Organisational indicators:

☐ Nursing and midwifery absence rates
☐ Staff skill mix ratios
☐ Nurse vacancy rates
☐ Percentage of nurse supervision
☐ Percentage of midwifery supervision
☐ Percentage of annual appraisals
☐ Percentage of eligible nursing staff who have completed mandatory training in the last 12 months (various training topics)
☐ Percentage of nursing staff reporting positive job satisfaction
☐ Waiting times for nurse consultations
☐ Number of adverse events related specifically to nursing care

Please include any additional indicators in the box below.

Acute care indicators:

☐ Incidence of pressure ulcers
☐ Percentage of patients assessed for nutritional requirements.
☐ Evidence of action on early warning scores if warranted
☐ Percentage of inpatients who experience a hospital-acquired complication and die (failure to rescue)
☐ Falls (could include evidence of appropriate assessment/ reporting and rates)
☐ Prevalence of nosocomial infections (associated with: urinary catheters, central lines, ventilator pneumonia, and cellulitis)
☐ Compliance with hand hygiene

☐ Recording of pain scores (could include evidence of accurate recording, action on and patient satisfaction with pain management)
☐ Incidence of medication errors
☐ Incidence of complaints specific to nursing care
☐ Nurse led discharge rates
☐ Incidence of vascular access complications
☐ Incidence of restraint
☐ Incidence of pulmonary embolism
☐ Incidence of deep venous thrombosis
☐ Number of patients who have received a vulnerable adult risk assessment

Please include any additional indicators in the box below.

Field specific (NMC 2010) indicators and areas of specialism. Some of these indicators may be used across fields for example, children who require a Looked After Children's review may be supported by children's, mental health or learning disability services. Please only include additional indicators once.

Mental health specific including community
☐ Percentage of patients who have received a safety/risk assessment
☐ Percentage of completed weekly treatment plans
☐ Evidence of user and career involvement in treatment plans
☐ Patient readmission rates for bipolar illness and schizophrenia
☐ Number of CORE outcome self-assessments completed
☐ Percentage of staff trained in Management of Actual or Potential Aggression (MAPA)
☐ Percentage of staff trained in Wellness Recovery Action Plans (WRAP)
☐ Percentage of young people and their families engaged in the Choice and Partnership Approach (CAPA)
☐ Percentage of patients on a caseload who have been screened for alcohol intake as part of their assessment or personalised care planning
☐ Percentage of patients on a caseload who have been screened for illegal drug as part of their assessment or personalised care planning
☐ Percentage of patients on a caseload who have been screened for anxiety and depression

Please include any additional indicators in the box below.

Learning disability specific including community
☐ Percentage of people who have received a safety/risk assessment

☐ Number of people CORE-LD outcome self-assessments completed
☐ Percentage of people with an individualised care plan
☐ Evidence of personal participation in care planning
☐ Percentage of people accessing annual health checks (including vaccinations, dental and cervical/breast screening)
☐ Each person with a learning disability can access a named person who can signpost them to relevant services
☐ Number of people with completed health action plans (including e.g. weight, fitness, smoking)
☐ Number of people supported to live in the community
☐ Percentage of people with a learning disability who do not use speech as their main form of communication who have been supported to establish a functional communication system
☐ Percentage of parents whose child has a learning disability and complex physical health needs who have, and can name their, key worker with coordinating responsibility
☐ Percentage of children and young people with complex physical health needs who have effective transition arrangements in place between hospital and community
☐ Where challenging behaviours present a significant risk to the individual, a Management Plan has been developed and implemented within 48 hours
☐ Percentage of people with a learning disability and dementia who can access appropriate dementia services as required
☐ Evidence of specific actions in palliative care service delivery that make reasonable adjustment for people with a learning disability

Please include any additional indicators in the box below.

Children's specific including community
☐ Number of children who have received a safeguarding risk assessment
☐ Prevention of hyponatremia
☐ Pain assessment undertaken using an appropriate tool
☐ Use of non-drug methods of pain relief
☐ Evidence of child/young person involvement as appropriate in decision-making about care
☐ Evidence of effective communication between child/young person and health care professionals
☐ Evidence of psychosocial support for children with a chronic illness
☐ Parent/carer satisfaction with facilities provided if able/wants to stay with child
☐ Percentage of paediatric and neonatal trained nurses
☐ Provision for age and developmental needs (could include play room, school room, school teacher)
☐ Percentage of children on a caseload who have a care plan
☐ Number of Looked After Children (LAC) reviews
☐ Percentage of children in reception year who are obese

☐ Percentage of children who have had a two-year review by 32 months of age
☐ Percentage of children for whom you are commissioned to provide a service who, on becoming looked after, have received a health assessment

Please include any additional indicators in the box below.

Maternity specific including community
☐ Percentage of mothers attending a 12 week booking appointment
☐ Number of infants' breast fed totally or partially at 6-8 weeks
☐ Number of first time mothers attending antenatal classes
☐ Percentage of expectant mothers registered as a smoker when booking a first midwife appointment who, by the time of delivery, have stopped smoking
☐ Percentage of new mothers with an assessment for postnatal depression
☐ Percentage of home births
☐ Percentage of women who receive 1:1 care during labour
☐ Percentage of mothers with a pre-existing condition offered pre-conception counselling/care (e.g. cardiac, diabetes, epilepsy)
☐ Percentage of mothers screened for domestic violence

Please include any additional indicators in the box below.

Community specific
☐ Cervical screening rates
☐ Number of vaccinations (of various types)
☐ Number of patients who receive an annual diabetic health check up
☐ Attendance at smoking cessation clinics
☐ Incidence of leg ulcers
☐ Percentage of venous leg ulcer wounds that have healed within 12 to 24 weeks from start of treatment
☐ Multi-disciplinary referral rates
☐ Percentage of patients from an agreed cohort who have an unplanned admission where the length of stay was less than two days
☐ Percentage of patients on a caseload achieving improvement as measured using a validated assessment tool appropriate to the scope of the practice
☐ Percentage of patients on a caseload who have not been admitted to hospital by day 90 following referral (community support has avoided hospital admission)
☐ Percentage of carers who have been assessed for strain using a recognised tool e.g. Caregiver Strain Index
☐ Percentage of completed referrals for home equipment within seven days
☐ Where care is being delivered in the patient's home, the percentage of patients offered a time band for a visit

Please include any additional indicators pertinent to community specialist nurses or teams.

Intensive care/high dependency specific

☐ Designation of a clinical liaison who will communicate with the family daily
☐ Incidence of unplanned extubations
☐ 48 hour readmission rates
☐ Percentage of nurses with critical care training
☐ Percentage of patients admitted within a set time parameter
☐ Number of patients with premature discharge
☐ Prevention of ventilator-associated pneumonia
☐ Prevalence of peptic ulcer disease
☐ Percentage of blood transfusion errors
☐ Use of case management approach
☐ Prevalence of open vs closed suction system
☐ Maintenance of predetermined blood glucose levels
☐ Initiation of ventilator weaning following a protocol
☐ Initiation of tracheostomy decannulation following a protocol

Please include any additional indicators in the box below.

Palliative care specific

☐ There is a holistic assessment of palliative care needs of patients and their family caregivers
☐ Number of patients who have been assigned a palliative/oncology nurse
☐ There is an assessment of pain and other symptoms using a validated instrument
☐ Percentage of patients with moderate to severe pain
☐ Percentage of patients who feel depressed
☐ Percentage of patients with shortness of breath
☐ Percentage of patients with constipation
☐ Percentage of relatives who felt that they were treated well in all respects by the caregivers
☐ There are facilities for a relative to stay overnight
☐ For a palliative care patient staying at home there is the possibility, if needed, to provide someone (a volunteer or professional) to stay overnight if needed
☐ Dying patients are able to have a single bedroom if they want to

☐ Presence of documentation concerning the desired care and treatment at the end of life
☐ Percentage of patients who died in the location of their preference
☐ Percentage of relatives who indicate that the patient died peacefully
☐ All relevant team members are informed about patients who have died

Please include any additional indicators in the box below.

Please include any additional indicators which you do not feel are represented above, but wish to have included, in the box below.

Part 2.
Please indicate how the indicators selected in part 1 were identified.
Tick all that apply.

☐ Clinical guidelines
☐ Policies
☐ Identified by local need and developed at this level or by a quality improvement person/ group
☐ Identified by service level need and developed at this level or by a quality improvement person/group
☐ Identified through a management framework (e.g. strategic plan or balanced score card)
☐ Patient feedback
☐ Regional indicator development bodies or steering groups
☐ Government publications
☐ Professional bodies
☐ National databases
☐ Research findings (including Delphi, RAND, consensus studies)
☐ Evidence-based practice
☐ World Wide Web
☐ Other

If other, please indicate what in the box below.

Part 3.

Please indicate the methods used for the measurement and collection of indicator data.
Tick all that apply.

☐ Review of nursing and medical documents
☐ Local audits
☐ External audits
☐ Observation of practice (including senior nurse ward rounds)
☐ Satisfaction surveys (including groups that seek service user feedback)
☐ Patient stories
☐ Incident and complaints/compliment records
☐ Excel spreadsheets
☐ Dashboards
☐ Balanced scorecards
☐ Database
☐ Custom designed computer system
☐ Ready-made, validated computer measurement tools (e.g. CORE software, Nursing Minimum Data Sets)
☐ Report/score cards (including National Patient Safety Alert, Patient Reported Outcomes Measures)
☐ Other

If other, please indicate what in the box below.

Part 4.
Please indicate what data reporting and analysis methods are used in the organisation.
Tick all that apply.

☐ Excel spreadsheets
☐ Dashboards
☐ Balanced scorecards
☐ Custom designed computer system
☐ Ready-made, validated computer measurement tools (e.g. CORE software, Nursing Minimum Data Sets)
☐ Accountability reviews
☐ Report/score cards
☐ Database
☐ CORE software
☐ Trend analysis
☐ Statistical comparison
☐ Comparison to expected performance goal

☐ Cross checking for logical inconsistencies against separate items of information
☐ Content analysis
☐ Causal analysis
☐ Pareto chart analysis
☐ Other

If other, please indicate what in the box below.

Part 5.

Please indicate how frequently indicator data is reported from unit level to service level.
Tick all that apply.

☐ Weekly
☐ Weekly if a problem has been identified
☐ Fortnightly
☐ Fortnightly if a problem has been identified
☐ Monthly
☐ Monthly if a problem has been identified
☐ Quarterly
☐ Less frequently than quarterly
☐ Other

If other, please indicate what in the box below.

Please indicate how frequently indicator data is reported from service level to executive board level.
Tick all that apply.

☐ Weekly if a problem has been identified
☐ Fortnightly
☐ Fortnightly if a problem has been identified
☐ Monthly
☐ Monthly if a problem has been identified
☐ Less frequently than monthly
☐ Other

If other, please indicate what in the box below.

Part 6.
Please indicate how the organisation acts on indicator data.
Tick all that apply.

☐ Action plans at local level if problems are identified
☐ Service level action plans if problems are identified
☐ Organisational action plan if problems are identified
☐ Involvement of a quality improvement person/group
☐ Celebration of improvement in practice
☐ Escalation to service level
☐ Escalation of all local level data to the executive board
☐ Action plans tabled for follow up at every service meeting until improvement is consistently identified
☐ Action plans tabled for follow up at every executive board meeting until improvement is consistently identified
☐ Presentation of good practice within the organisation
☐ Presentation for discussion at shared learning forums
☐ Other

If other, please indicate what in the box below.

Part 2 alternative

What was the driver for KPI use?

Local unit or service need	Yes/No
Organisational need	Yes/No
Department of Health policy and guidelines	Yes/No

Please indicate from what source/s the indicators selected in part 1 were developed.
Tick all that apply.

☐ Developed at unit or service level
☐ Quality improvement person/group
☐ Regional indicator development bodies or steering groups
☐ Government publications
☐ Professional bodies
☐ National databases
☐ Research findings (including Delphi, RAND, consensus studies)
☐ Evidence-based practice
☐ World Wide Web
☐ Other

Appendix 7: Email to the directors of nursing

How does the use of key performance indicators influence nursing and midwifery practice?

Dear colleague,

I am a doctoral student currently undertaking a PhD in the Ulster University. I am writing to ask if you would kindly consider taking part in phase one of a research study. The purpose of the study is to investigate how the use of key performance indicators (KPI's) impacts on nursing and midwifery practice.

Although there is substantial evidence of the development and application of KPI's in practice, there is limited research into how the information generated by use of these KPI's, influences practice to improve patient care. I wish to explore the use of nurse-sensitive KPI's in healthcare that influence those care outcomes most affected by nursing practice. I am therefore circulating a questionnaire to healthcare organisations across the United Kingdom and Ireland.

Your participation in this survey will contribute to the knowledge-base generated by this research which, it is anticipated, will support the future use of indicators that will facilitate the delivery of meaningful care that improves outcomes for patients and families. It will only take approximately 25 minutes of your time, and your input will be very much appreciated. Two options for completion of the questionnaire are available.
Either;
complete the online questionnaire by clicking on the following hyperlink:
https://ulsterhealth.eu.qualtrics.com/SE/?SID=SV_8HR7rWAlJbdZnbn

Please note - if you need to exit and return to the questionnaire later, Qualtrics will save your responses.
Or;
print off, complete and return the attached questionnaire to myself at the address below.

Further details are included in the attached Participant Information Sheet to which a copy of the questionnaire is included. A leaflet version of the information is also attached. A request for contact details is included at the end of the questionnaire if you would be willing to participate in phase two. If you have any questions about the questionnaire or research study I can be contacted at *Insert email address*

Completion and return of the questionnaire is requested by the 25th February 2016.

I would like to thank you in advance of your contribution and very much appreciate your time and effort,

Olivia

Ulster University

Insert contact details

Appendix 8: Phase one letter of invitation

Letter of Invitation

Study Title: ***How does the use of key performance indicators influence nursing and midwifery practice?***

Dear colleague,

I am a doctoral student currently undertaking a PhD in the Ulster University. I am writing to ask if you would kindly consider taking part in phase one of a research study. The purpose of the study is to investigate how the use of key performance indicators (KPI's) impacts on nursing and midwifery practice.

Although there is substantial evidence of the development and application of KPI's in practice, there is limited research into how the information generated by use of these KPI's influences practice to improve patient care. I wish to explore the use of nurse-sensitive KPI's in healthcare that influence those care outcomes most affected by nursing practice. I am therefore circulating a questionnaire to healthcare organisations across the United Kingdom and Ireland.

Your participation in this survey will contribute to the knowledge-base generated by this research which it is anticipated, will support the future use of indicators that will facilitate the delivery of meaningful care that improves outcomes for patients and families. It will only take approximately 20 minutes of your time, and your input will be very much appreciated.

Further details are included in the attached Participant Information Sheet to which a copy of the questionnaire is included. A leaflet version of the information is also attached. A request for contact details is included at the end of the questionnaire if you would be willing to participate in phase two. If you have any questions about the questionnaire or research study I can be contacted at gray-o@email.ulster.ac.uk

Completion and return of the questionnaire is requested by the **……. 2016.**

Yours sincerely,

Olivia Gray
PhD student
Insert contact details

Appendix 9: Phase one participant information sheet

Participant Information Sheet for Directors of Nursing

Study Title: ***How does the use of key performance indicators influence nursing and midwifery practice?***

Invitation.

Dear colleague,

You are being invited to complete a questionnaire as phase one of a research study. Before you decide to take part you need to understand why the research is being done and what it would involve for you. Please take the time to read this information carefully and feel free to contact either myself or the chief investigator about the study if this would help.

What is the study about?

The aim of this UK and Ireland study is to explore the impact of KPI's on nursing and midwifery practice within an organisational context. These high-level performance and care quality indicators are nurse-sensitive; those indicators that capture care or its outcomes most affected by nursing practice.

Why has my organisation been selected?

All healthcare organisations in the United Kingdom and Ireland, except Ambulance trusts, public health, GP practices and the private/voluntary sector, are being invited to participate. Your Chief Nursing Officer has been informed of this study.

Do I have to take part?

No - participation is entirely voluntary. It is up to you to decide. If you choose not to take part this will be respected and will not affect your professional standing in any way. Completion of this questionnaire does not commit your organisation to participation in phase two.

What will the study involve?

Phase one of the study involves completion of a questionnaire. It should only take approximately 20 minutes of your time. Completion and return of the questionnaire is requested by the:

What is required if I take part?

To make it easier for you, the questionnaire may be completed in the following ways:

- online via Qualtrics by clicking on the hyperlink in the body of the email. The questionnaire automatically saves completed pages if you need to exit and return to it at a later time.
- by printing off the questionnaire, and posting to Olivia Gray at the address below.

Will my information be kept confidential?

The responses provided in the questionnaire will be anonymous and confidential. Qualtrics will not collect IP addresses therefore organisations will remain anonymous. All information will be handled, and stored in accordance with the requirements of the Data Protection Act 1998.

What if there is a problem?

If you have concerns about the questionnaire or any aspect of the study, you can contact me or the Chief Investigator of the study (see contact details), and we will try to answer your questions. If you remain unhappy and wish to complain formally, you will be provided with relevant information that will enable you to do so.

What will happen to the results of the research study?

It is anticipated that the results of this questionnaire will contribute to the body of evidence on KPI's in the United Kingdom and Ireland, identify strategies that have been developed for their effective use and help to maximise the future use of KPI's to improve care quality and the patient experience. Once complete the study findings will be sent for publication in a professional and/or peer reviewed journal and/or may be presented at conferences. You will personally receive a written summary of the key findings from the study and an opportunity to discuss this with the research team if you wish.

Some organisations will be invited to participate in phase two of the study. Phase two will involve interviews (face-to-face or telephone) with nurses and midwives. This will provide a more in-depth understanding of the influence of KPI's on nursing and midwifery practice and identify barriers and enablers for maximising the impact of KPI's.

Who is organising and funding the research?

This study is being led by the Ulster University, Northern Ireland. Funding has been secured from the Department of Employment and Learning and the five Health and Social Care Trusts in Northern Ireland.

Who has reviewed the study?

The study has been reviewed by the Ulster University, School of Nursing Research Ethics Committee.

Further information and contact details

If you have any queries or would like further information on the study please feel free to contact a member of the research team. Contact details are provided below.

Yours sincerely,

Olivia

Professor Tanya McCance (Chief Investigator)

Professor of Nursing, Ulster University

Insert contact details

Olivia Gray (PhD Student)
Insert contact details

Appendix 10: Table of interview guides

Directors of nursing	Senior managers	Clinical managers
What is your view on the use of key performance indicators as a mechanism to improve quality of care?	What is your view on the use of key performance indicators?	What does a key performance indicator mean to you?
Can you tell me about what drives KPI selection and use in this organisation?	Can you tell me about what drives KPI selection and use in this organisation?	What is your general view of KPI's?
Can you tell me why you think that only a small number of KPI's are identified in the community setting?	Can you tell me why you think that only a small number of KPI's are identified in the community setting?	What KPI's do you use most frequently in your area?
What KPI's do you feel are of most value to service and why?	What KPI's do you feel are of most value to service and why?	What KPI's do you think are most beneficial?
Can you tell me about any challenges you have come across in relation to KPI use?	Can you tell me about any challenges you have come across in relation to KPI use?	Can you tell me about any challenges you have come across in relation to KPI use?
What are your views on the value of KPI's that measure efficiency with those that measure quality of care	What are your views on the value of KPI's that measure efficiency with those that measure quality of care	In what ways are your staff engaged in KPI use?
How are you assured that the KPI's collected in this organisation benefit patients?	a. How do the systems you have in place help the management of KPI data at clinical level? b. How do they offer assurance at organisational level?	What systems do you have in place for managing your KPI data?
How do you use the data collected to inform the organisational direction for patient care?	What strategies or structures are in place within the organisation to support and encourage action on KPI's to improve practice?	Can you tell me about any support provided within the organisation for KPI use?
I am interested in exploring what ways your staff are supported to improve care based on use of KPI's?	How is patients experience captured and how are you assured that it is being used to improve care?	What are your thoughts on the value of patient surveys to improve care?
How is patients experience captured and how are you assured that it is being used to improve care?	If you had to make one suggestion about how to make the KPI process more effective at improving patient care, what would it be?	Can you give me any examples of KPI's that you have used to improve practice?
If you had one suggestion about how to make the KPI process more effective at improving patient care, what would it be?		Can you tell me about an occasion when you considered KPI's were not helpful for patient care?
		If you had to make one suggestion about how to make the KPI process more effective at improving patient care, what would it be?

Appendix 11: Certificate of participation

Reflective account: Participation in a research study.

Study Title:

How does the use of key performance indicators influence nursing and midwifery practice?

Self-assessment/reflection/comment
What was the nature of the CPD activity and/or practice-related feedback and/or event or experience in your practice?
What did you learn from the CPD activity and/or feedback and/or event or experience in your practice?
How did you change or improve your practice as a result?
How is this relevant to the Code? **Select a theme: Prioritise people - Practice effectively - Preserve safety - Promote professionalism and trust?**

_____

Participated in an

INTERVIEW CONTRIBUTING TO A UNITED KINGDOM AND IRELAND NURSING AND MIDWIFERY RESEARCH STUDY

(***Insert time spent:*** …….. of participatory CPD)

On

_____

DATE

_____

Research Facilitator

Appendix 12: Phase two participant information sheet

LETTER OF INVITATION AND INFORMATION FOR INTERVIEWEES

Study Title:

How does the use of key performance indicators influence nursing and midwifery practice?

Invitation.

Dear colleague,

I am a nurse and am currently undertaking a research study as part of my PhD, with the Ulster University. I am writing to invite you to take part in a taped semi-structured interview within phase two of this research study. Before you decide I would like you to understand why the research is being undertaken and what it would involve for you. Please take the time to read this information carefully and feel free to contact either myself or the chief investigator about the study if this would help.

What is the study about?
The aim of this UK and Ireland study is to explore how the use of KPI's within healthcare organisations influences nursing and midwifery practice. The performance and quality indicators that are of interest are those that capture the delivery and outcomes of nursing and midwifery care. The aim of the interview is to gain a deeper understanding of your experience and views on the use of KPI's for example, what benefits and challenges you have encountered in using KPI's, have you any examples of when they were used to improve practice? It is anticipated that the results of the study will contribute to the knowledge-base on KPI's and the processes involved in their management. The study findings may potentially contribute to the future development of indicators that will be used to deliver meaningful care that improves outcomes for patients and families, as well as potentially streamlining the KPI process.

Why has my organisation been selected?
All healthcare organisations in the United Kingdom and Ireland (except Ambulance trusts, public health, GP practices and the private sector) were invited to take part in phase one. At that time your Director of Nursing expressed willingness to participate in this second phase.

Do I have to take part?
No - your participation is entirely voluntary; you are free to withdraw at any stage and are not obliged to disclose anything you may feel uncomfortable with.

What is required if I take part?
This phase of the study involves taking part in a semi-structured interview. It will take no more than an hour of your time and we can meet at a location and time to be agreed between the two of us. With your permission, the interview will be recorded to ensure your information is captured accurately and you will also be asked to sign a consent form. There are no right or wrong answers – I am simply interested in your opinion. The information you provide will then be analysed for themes and information that contribute to this study.

Will my information be kept confidential?
All information collected will be strictly confidential. Your name and details will not be recorded. The recording will be transcribed verbatim by the researcher or a certified transcriber and your responses will be anonymised to avoid identification. Direct quotations may be used, however your name will not be disclosed and it will not be possible to trace personal information back to you. If information is disclosed that identifies a patient safety or public protection issue then this overrides the need for confidentiality, and may be shared with other healthcare professionals (NMC 2015). All information will be handled and stored in accordance with the requirements of the Data Protection Act 1998.

What are the benefits of taking part?
By taking part in this research you will be contributing to the evidence-based of knowledge on KPI use which has the potential to influence the future use of indicators to improve care for patients. As a research participant you may choose to use the interview as evidence to contribute to your continuing professional development for the NMC. A certificate of contribution to research and a reflective accounts template will be supplied on completion of the interview.

What if there is a problem?
You are free to stop at any time and can leave the room without any explanation being needed. If there are any issues that arise that you feel you may require support to deal with, counselling can be arranged through the Occupational Health department of your organisation. If you have concerns about the interview or any aspect of the study, you can contact me or the Chief Investigator of the study (see contact details), and we will try to answer your questions. If you remain unhappy and wish to complain formally, you will be provided with relevant information that will enable you to do so.

What will happen to the results of the research study?
It is anticipated that the results of this study will contribute to the body of evidence on KPI's in the United Kingdom and Ireland, identify strategies that have been developed for their effective use and help to maximise the future use of KPI's to improve care quality and the patient experience. Once complete the study findings will be sent for publication in a professional and/or peer reviewed journal and/or may be presented at conferences. You will personally receive a written summary of the key findings from the study and an opportunity to discuss this with the research team if you wish.

Who is organising and funding the research?
This study is being led by the Ulster University, Northern Ireland. Funding has been secured from the Department of Employment and Learning and the five Health and Social Care Trusts in Northern Ireland. A travel scholarship has been granted by the Florence Nightingale Foundation.

Who has reviewed the study?
The study has been reviewed by the Ulster University, School of Nursing Research Ethics Committee and by the Research and Development office of your organisation.

Further information and contact details
If you have any queries or would like further information on the study please feel free to contact a member of the research team. Contact details are provided below.
Please confirm within the next week if you are interested in taking part in an interview. I shall then contact you to confirm a date and venue.

Thank you for considering this request,

Olivia Gray (PhD Student)
Insert contact details
Professor Tanya McCance (Chief Investigator)
Insert contact details

Appendix 13: Consent form

CONSENT FORM FOR INTERVIEW PARTICIPANTS

Study title: ***How does the use of key performance indicators influence nursing and midwifery practice?***

By ticking the boxes below, I confirm that:

1	I have read and understood the information for the above project. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily.	☐
2	I understand that the interviewer will hold all information and data collected in a secure and confidential manner.	☐
3	I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason. Any data obtained will be removed if you chose to withdraw.	☐
4	I understand that the interview will be recorded and that anonymised direct quotations may be used from this. However, no-one will be able to identify me through the information presented.	☐
5.	I understand that disclosure of unsafe practice will have to be shared with a designated professional as per my organisation's protocol.	☐
6.	I **agree to take part** in an interview within this study.	☐

I confirm that I have read and understood the information above:

Name of participant: Signature:

Date:

Name of facilitator taking consent: Signature:

Date:

Appendix 14: Descriptive statistics of quantitative responses

Q1. Participant organisations per country

Please indicate your organisation's location

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 England	32	41.6	41.6	41.6
	2 Northern Ireland	5	6.5	6.5	48.1
	3 Scotland	7	9.1	9.1	57.1
	4 Wales	2	2.6	2.6	59.7
	5 Ireland	31	40.3	40.3	100.0
	Total	77	100.0	100.0	

Q2. Population size covered by participant organisations

What size of a population does your organisation cover?

	Valid	68
	Missing	9
Mean		165903.91
Median		525.00
Std. Deviation		443082.914
Range		3199999
Minimum		1
Maximum		3200000

Q3. Frequencies of Population areas covered

What population areas do you cover?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Rural	7	9.1	9.1	9.1
	2 Urban	10	13.0	13.0	22.1
	3 Both	60	77.9	77.9	100.0
	Total	77	100.0	100.0	

Q4. Services provided by participant organisations

Which of the following services do you provide?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Acute	15	19.5	20.5	20.5
	2 Community	19	24.7	26.0	46.6
	3 Both	39	50.6	53.4	100.0
	Total	73	94.8	100.0	
Missing	99 missing	4	5.2		
Total		77	100.0		

Q5. Areas of practice within organisations

Area of practice - Adult

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	7	9.1	9.1	9.1
	1 chosen	70	90.9	90.9	100.0
	Total	77	100.0	100.0	

Area of practice - Midwifery

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	20	26.0	26.0	26.0
	1 chosen	57	74.0	74.0	100.0
	Total	77	100.0	100.0	

Area of practice - Children's

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	17	22.1	22.1	22.1
	1 chosen	60	77.9	77.9	100.0
	Total	77	100.0	100.0	

Area of practice - Learning Disability

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	43	55.8	55.8	55.8
	1 chosen	34	44.2	44.2	100.0
	Total	77	100.0	100.0	

Area of practice - Community

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	29	37.7	37.7	37.7
	1 chosen	48	62.3	62.3	100.0
	Total	77	100.0	100.0	

Area of practice - Mental Health

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	46	59.7	59.7	59.7
	1 chosen	31	40.3	40.3	100.0
	Total	77	100.0	100.0	

Q6. Total staff employed by participant organisations

Please indicate the total number of staff employed

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 under 2000	31	40.3	40.3	40.3
	2 2001-5000	14	18.2	18.2	58.4
	3 5001-10000	15	19.5	19.5	77.9
	4 10001-15000	10	13.0	13.0	90.9
	5 15001-20000	2	2.6	2.6	93.5
	6 over 20000	5	6.5	6.5	100.0
	Total	77	100.0	100.0	

Q7. Approximate number of nurses employed

Please indicate the approximate number of nurses employed

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 under 1000	36	46.8	46.8	46.8
	2 1001-3000	21	27.3	27.3	74.0
	3 3001-5000	10	13.0	13.0	87.0
	4 5001-7000	6	7.8	7.8	94.8
	6 over 9000	4	5.2	5.2	100.0
	Total	77	100.0	100.0	

Q8. Approximate number of midwives employed

Please indicate the approximate number of midwives employed

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 under 1000	49	63.6	90.7	90.7
	2 1001-3000	5	6.5	9.3	100.0
	Total	54	70.1	100.0	
Missing	88 not applicable	20	26.0		
	99 missing	3	3.9		
	Total	23	29.9		
Total		77	100.0		

Q9. Frequently cited organisational KPI's

Frequently cited organisational KPI's -Agency and nurse bank usage

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	61	79.2	80.3	80.3
	2 No	15	19.5	19.7	100.0
	Total	76	98.7	100.0	
Missing	99 missing	1	1.3		
Total		77	100.0		

Frequently cited organisational KPI's - Number of nursing vacancies

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	66	85.7	86.8	86.8
	2 No	10	13.0	13.2	100.0
	Total	76	98.7	100.0	
Missing	99 missing	1	1.3		
Total		77	100.0		

Frequently cited organisational KPI's - Number of nursing absences

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	65	84.4	86.7	86.7
	2 No	10	13.0	13.3	100.0
	Total	75	97.4	100.0	
Missing	99 missing	2	2.6		
Total		77	100.0		

Frequently cited organisational KPI's - Incidence of complaints specifically related to nursing care

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	62	80.5	81.6	81.6
	2 No	14	18.2	18.4	100.0
	Total	76	98.7	100.0	
Missing	99 missing	1	1.3		
Total		77	100.0		

Q10. Data collection methods for organisational KPI's

How is the data collected for - Agency and nurse bank usage?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	5	6.5	8.2	8.2
	2 Computer	34	44.2	55.7	63.9
	3 Both	22	28.6	36.1	100.0
	Total	61	79.2	100.0	
Missing	88 not applicable	15	19.5		
	99 missing	1	1.3		
	Total	16	20.8		
Total		77	100.0		

How is the data collected for - Number of nursing vacancies?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	5	6.5	7.5	7.5
	2 Computer	36	46.8	53.7	61.2
	3 Both	26	33.8	38.8	100.0
	Total	67	87.0	100.0	
Missing	88 not applicable	9	11.7		
	99 missing	1	1.3		
	Total	10	13.0		
Total		77	100.0		

How is the data collected for - Number of nursing absences?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	3	3.9	4.7	4.7
	2 Computer	40	51.9	62.5	67.2
	3 Both	21	27.3	32.8	100.0
	Total	64	83.1	100.0	
Missing	88 not applicable	10	13.0		
	99 missing	3	3.9		
	Total	13	16.9		
Total		77	100.0		

How is the data collected for -Incidence of complaints specifically related to nursing care?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	8	10.4	12.9	12.9
	2 Computer	27	35.1	43.5	56.5
	3 Both	27	35.1	43.5	100.0
	Total	62	80.5	100.0	
Missing	88 not applicable	14	18.2		
	99 missing	1	1.3		
	Total	15	19.5		
Total		77	100.0		

Q11. Frequency of organisational KPI data collection

How frequently is the data collected for - Agency and nurse bank usage?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	57	74.0	93.4	93.4
	3 Quarterly or less frequently	4	5.2	6.6	100.0
	Total	61	79.2	100.0	
Missing	88 not applicable	15	19.5		
	99 missing	1	1.3		
	Total	16	20.8		
Total		77	100.0		

How frequently is the data collected for - Number of nursing vacancies?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	58	75.3	86.6	86.6
	2 Bi-monthly	2	2.6	3.0	89.6
	3 Quarterly or less frequently	7	9.1	10.4	100.0
	Total	67	87.0	100.0	
Missing	88 not applicable	9	11.7		
	99 missing	1	1.3		
	Total	10	13.0		
Total		77	100.0		

How frequently is the data collected for - Number of nursing absences?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	62	80.5	95.4	95.4
	3 Quarterly or less frequently	3	3.9	4.6	100.0
	Total	65	84.4	100.0	
Missing	88 not applicable	10	13.0		
	99 missing	2	2.6		
	Total	12	15.6		
Total		77	100.0		

How frequently is the data collected? -Incidence of complaints related to nursing care

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	49	63.6	79.0	79.0
	2 Bi-monthly	1	1.3	1.6	80.6
	3 Quarterly or less frequently	12	15.6	19.4	100.0
	Total	62	80.5	100.0	
Missing	88 not applicable	14	18.2		
	99 missing	1	1.3		
	Total	15	19.5		
Total		77	100.0		

Q12. Organisational KPI's collected by clinical, admin and managers

Bank usage data is collected by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	34	44.2	56.7	56.7
	1 chosen	26	33.8	43.3	100.0
	Total	60	77.9	100.0	
Missing	88	15	19.5		
	99	2	2.6		
	Total	17	22.1		
Total		77	100.0		

Bank usage data is collected by admin/clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	22	28.6	36.7	36.7
	1 chosen	38	49.4	63.3	100.0
	Total	60	77.9	100.0	
Missing	88	15	19.5		
	99	2	2.6		
	Total	17	22.1		
Total		77	100.0		

Bank usage data is collected by managerial staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	31	40.3	51.7	51.7
	1 chosen	29	37.7	48.3	100.0
	Total	60	77.9	100.0	
Missing	88	15	19.5		
	99	2	2.6		
	Total	17	22.1		
Total		77	100.0		

Nursing vacancy data collected by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	42	54.5	63.6	63.6
	1 chosen	24	31.2	36.4	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Nursing vacancy data collected by admin/clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	33	42.9	50.0	50.0
	1 chosen	33	42.9	50.0	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Nursing vacancy data collected by manager

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	25	32.5	37.9	37.9
	1 chosen	41	53.2	62.1	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Nursing absences data collected by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	42	54.5	65.6	65.6
	1 chosen	22	28.6	34.4	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Nursing absences data collected by admin/clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	27	35.1	42.2	42.2
	1 chosen	37	48.1	57.8	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Nursing absences data collected by managerial staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	23	29.9	35.9	35.9
	1 chosen	41	53.2	64.1	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Nursing complaints data collected by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	36	46.8	58.1	58.1
	1 chosen	26	33.8	41.9	100.0
	Total	62	80.5	100.0	
Missing	88	14	18.2		
	99	1	1.3		
	Total	15	19.5		
Total		77	100.0		

Nursing complaints data collected by admin/clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	29	37.7	46.8	46.8
	1 chosen	33	42.9	53.2	100.0
	Total	62	80.5	100.0	
Missing	88	14	18.2		
	99	1	1.3		
	Total	15	19.5		
Total		77	100.0		

Nursing complaints data collected by managerial staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	22	28.6	35.5	35.5
	1 chosen	40	51.9	64.5	100.0
	Total	62	80.5	100.0	
Missing	88	14	18.2		
	99	1	1.3		
	Total	15	19.5		
Total		77	100.0		

Q13. Organisational KPI's collated/analysed by clinical, admin, manager or other staff

Bank usage data analysed by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	32	41.6	56.1	56.1
	1 chosen	25	32.5	43.9	100.0
	Total	57	74.0	100.0	
Missing	88	16	20.8		
	99	4	5.2		
	Total	20	26.0		
Total		77	100.0		

Bank usage data analysed by admin or clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	38	49.4	66.7	66.7
	1 chosen	19	24.7	33.3	100.0
	Total	57	74.0	100.0	
Missing	88	16	20.8		
	99	4	5.2		
	Total	20	26.0		
Total		77	100.0		

Bank usage data analysed by managerial staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	12	15.6	21.1	21.1
	1 chosen	45	58.4	78.9	100.0
	Total	57	74.0	100.0	
Missing	88	16	20.8		
	99	4	5.2		
	Total	20	26.0		
Total		77	100.0		

Bank usage data analysed by other staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	51	66.2	86.4	86.4
	1 chosen	8	10.4	13.6	100.0
	Total	59	76.6	100.0	
Missing	88	15	19.5		
	99	3	3.9		
	Total	18	23.4		
Total		77	100.0		

Nurse vacancies data analysed by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	40	51.9	60.6	60.6
	1 chosen	26	33.8	39.4	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Nurse vacancies data analysed by admin or clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	47	61.0	71.2	71.2
	1 chosen	19	24.7	28.8	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Nurse vacancies data analysed by other staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	58	75.3	87.9	87.9
	1 chosen	8	10.4	12.1	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Nurse absences data analysed by clinical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	40	51.9	62.5	62.5
	1 chosen	24	31.2	37.5	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Nurse absences data analysed by admin or clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	43	55.8	67.2	67.2
	1 chosen	21	27.3	32.8	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Nurse absences data analysed by managerial staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	13	16.9	20.3	20.3
	1 chosen	51	66.2	79.7	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Nurse absences data analysed by other staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	56	72.7	87.5	87.5
	1 chosen	8	10.4	12.5	100.0
	Total	64	83.1	100.0	
Missing	88	10	13.0		
	99	3	3.9		
	Total	13	16.9		
Total		77	100.0		

Complaints data analysed by clinical staff

		Frequency	Percent	Valid Percent	Cumulative
Valid	0 not chosen	35	45.5	58.3	58.3
	1 chosen	25	32.5	41.7	100.0
	Total	60	77.9	100.0	
Missing	88	14	18.2		
	99	3	3.9		
	Total	17	22.1		
Total		77	100.0		

Complaints data analysed by admin or clerical staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	38	49.4	63.3	63.3
	1 chosen	22	28.6	36.7	100.0
	Total	60	77.9	100.0	
Missing	88	14	18.2		
	99	3	3.9		
	Total	17	22.1		
Total		77	100.0		

Complaints data analysed by managerial staff

		Frequency	Percent	Valid Percent	Cumulative
Valid	0 not chosen	17	22.1	28.3	28.3
	1 chosen	43	55.8	71.7	100.0
	Total	60	77.9	100.0	
Missing	88	14	18.2		
	99	3	3.9		
	Total	17	22.1		
Total		77	100.0		

Complaints data analysed by other staff

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	52	67.5	86.7	86.7
	1 chosen	8	10.4	13.3	100.0
	Total	60	77.9	100.0	
Missing	88	14	18.2		
	99	3	3.9		
	Total	17	22.1		
Total		77	100.0		

Q15. Frequently cited clinical KPI's

Frequently cited clinical KPI's - Incidence of pressure ulcers

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	65	84.4	85.5	85.5
	2 No	11	14.3	14.5	100.0
	Total	76	98.7	100.0	
Missing	99 missing	1	1.3		
Total		77	100.0		

Frequently cited clinical KPI's - Assessment of nutritional requirements

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	59	76.6	78.7	78.7
	2 No	16	20.8	21.3	100.0
	Total	75	97.4	100.0	
Missing	99 missing	2	2.6		
Total		77	100.0		

Frequently cited clinical KPI's - Incidence of falls

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	67	87.0	89.3	89.3
	2 No	8	10.4	10.7	100.0
	Total	75	97.4	100.0	
Missing	99 missing	2	2.6		
Total		77	100.0		

Frequently cited clinical KPI's - Compliance with hand hygiene

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	72	93.5	94.7	94.7
	2 No	4	5.2	5.3	100.0
	Total	76	98.7	100.0	
Missing	99 missing	1	1.3		
Total		77	100.0		

Frequently cited clinical KPI's - Incidence of medication errors

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	66	85.7	88.0	88.0
	2 No	9	11.7	12.0	100.0
	Total	75	97.4	100.0	
Missing	99 missing	2	2.6		
Total		77	100.0		

Frequently cited clinical KPI's - Compliance with completion of national early warning scores (NEWS)

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	53	68.8	73.6	73.6
	2 No	19	24.7	26.4	100.0
	Total	72	93.5	100.0	
Missing	99 missing	5	6.5		
Total		77	100.0		

Frequently cited clinical KPI's - Prevalence of infections/HCAI (any of the following: urinary catheters, ventilator pneumonia, central lines, MRSA, C Difficile)

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	65	84.4	86.7	86.7
	2 No	10	13.0	13.3	100.0
	Total	75	97.4	100.0	
Missing	99 missing	2	2.6		
Total		77	100.0		

Q16. Data collection methods for clinical KPI's

How is the data collected for - Incidence of pressure ulcers?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	14	18.2	21.5	21.5
	2 Computer	24	31.2	36.9	58.5
	3 Both	27	35.1	41.5	100.0
	Total	65	84.4	100.0	
Missing	88 not applicable	11	14.3		
	99 missing	1	1.3		
	Total	12	15.6		
Total		77	100.0		

How is the data collected for - Assessment of nutritional requirements?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	18	23.4	30.5	30.5
	2 Computer	17	22.1	28.8	59.3
	3 Both	24	31.2	40.7	100.0
	Total	59	76.6	100.0	
Missing	88 not applicable	17	22.1		
	99 missing	1	1.3		
	Total	18	23.4		
Total		77	100.0		

How is the data collected for - Incidence of falls?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	10	13.0	15.2	15.2
	2 Computer	26	33.8	39.4	54.5
	3 Both	30	39.0	45.5	100.0
	Total	66	85.7	100.0	
Missing	88 not applicable	9	11.7		
	99 missing	2	2.6		
	Total	11	14.3		
Total		77	100.0		

How is the data collected for - Compliance with hand hygiene?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	13	16.9	18.3	18.3
	2 Computer	21	27.3	29.6	47.9
	3 Both	37	48.1	52.1	100.0
	Total	71	92.2	100.0	
Missing	88 not applicable	4	5.2		
	99 missing	2	2.6		
	Total	6	7.8		
Total		77	100.0		

How is the data collected for - Incidence of medication errors?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	8	10.4	12.1	12.1
	2 Computer	26	33.8	39.4	51.5
	3 Both	32	41.6	48.5	100.0
	Total	66	85.7	100.0	
Missing	88 not applicable	10	13.0		
	99 missing	1	1.3		
	Total	11	14.3		
Total		77	100.0		

How is the data collected for - Compliance with completion of NEWS?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	10	13.0	18.9	18.9
	2 Computer	17	22.1	32.1	50.9
	3 Both	26	33.8	49.1	100.0
	Total	53	68.8	100.0	
Missing	88 not applicable	20	26.0		
	99 missing	4	5.2		
	Total	24	31.2		
Total		77	100.0		

How is the data collected for - Prevalence of infections/HCAI ?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Paper	10	13.0	15.4	15.4
	2 Computer	20	26.0	30.8	46.2
	3 Both	35	45.5	53.8	100.0
	Total	65	84.4	100.0	
Missing	88 not applicable	11	14.3		
	99 missing	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Q17. Frequency of clinical KPI data collection

How frequently is the data collected for - Incidence of pressure ulcers?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	59	76.6	90.8	90.8
	3 Quarterly or less frequently	6	7.8	9.2	100.0
	Total	65	84.4	100.0	
Missing	88 not applicable	11	14.3		
	99 missing	1	1.3		
	Total	12	15.6		
Total		77	100.0		

How frequently is the data collected for - Assessment of nutritional requirements?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	51	66.2	86.4	86.4
	3 Quarterly or less frequently	8	10.4	13.6	100.0
	Total	59	76.6	100.0	
Missing	88 not applicable	17	22.1		
	99 missing	1	1.3		
	Total	18	23.4		
Total		77	100.0		

How frequently is the data collected for - Incidence of falls?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	64	83.1	97.0	97.0
	3 Quarterly or less frequently	2	2.6	3.0	100.0
	Total	66	85.7	100.0	
Missing	88 not applicable	9	11.7		
	99 missing	2	2.6		
	Total	11	14.3		
Total		77	100.0		

How frequently is the data collected for - Compliance with hand hygiene?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	60	77.9	83.3	83.3
	2 Bi-monthly	1	1.3	1.4	84.7
	3 Quarterly or less frequently	11	14.3	15.3	100.0
	Total	72	93.5	100.0	
Missing	88 not applicable	4	5.2		
	99 missing	1	1.3		
	Total	5	6.5		
Total		77	100.0		

How frequently is the data collected for - Incidence of medication errors?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	60	77.9	90.9	90.9
	3 Quarterly or less frequently	6	7.8	9.1	100.0
	Total	66	85.7	100.0	
Missing	88 not applicable	10	13.0		
	99 missing	1	1.3		
	Total	11	14.3		
Total		77	100.0		

How frequently is the data collected for - Compliance with completion of NEWS?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	46	59.7	86.8	86.8
	3 Quarterly or less frequently	7	9.1	13.2	100.0
	Total	53	68.8	100.0	
Missing	88 not applicable	20	26.0		
	99 missing	4	5.2		
	Total	24	31.2		
Total		77	100.0		

How frequently is the data collected for - Prevalence of infections/HCAI?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Monthly or more often	58	75.3	90.6	90.6
	3 Quarterly or less frequently	6	7.8	9.4	100.0
	Total	64	83.1	100.0	
Missing	88 not applicable	11	14.3		
	99 missing	2	2.6		
	Total	13	16.9		
Total		77	100.0		

Q18. Clinical KPI's collected by clinical, admin and managers

Pressure ulcer data collected by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	7	9.1	10.8	10.8
	1 chosen	58	75.3	89.2	100.0
	Total	65	84.4	100.0	
Missing	88	11	14.3		
	99	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Pressure ulcer data collected by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	51	66.2	78.5	78.5
	1 chosen	14	18.2	21.5	100.0
	Total	65	84.4	100.0	
Missing	88	11	14.3		
	99	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Pressure ulcer data collected by managerial staff ?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	51	66.2	78.5	78.5
	1 chosen	14	18.2	21.5	100.0
	Total	65	84.4	100.0	
Missing	88	11	14.3		
	99	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Nutritional data collected by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	5	6.5	8.5	8.5
	1 chosen	54	70.1	91.5	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Nutritional data collected by admin or clerical staff ?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	52	67.5	88.1	88.1
	1 chosen	7	9.1	11.9	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Nutritional data collected by managerial staff ?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	51	66.2	86.4	86.4
	1 chosen	8	10.4	13.6	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Falls data collected by clinical staff ?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	10	13.0	15.2	15.2
	1 chosen	56	72.7	84.8	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Falls data collected by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	54	70.1	81.8	81.8
	1 chosen	12	15.6	18.2	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Falls data collected by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	50	64.9	75.8	75.8
	1 chosen	16	20.8	24.2	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Hand hygiene data collected by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	11	14.3	15.3	15.3
	1 chosen	61	79.2	84.7	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Hand hygiene data collected by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	60	77.9	83.3	83.3
	1 chosen	12	15.6	16.7	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Hand hygiene data collected by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	54	70.1	75.0	75.0
	1 chosen	18	23.4	25.0	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Medication errors collected by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	13	16.9	19.7	19.7
	1 chosen	53	68.8	80.3	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Medication errors collected by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	54	70.1	81.8	81.8
	1 chosen	12	15.6	18.2	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Medication errors collected by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	48	62.3	72.7	72.7
	1 chosen	18	23.4	27.3	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Completion of NEWS collected by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	4	5.2	7.5	7.5
	1 chosen	49	63.6	92.5	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Completion of NEWS collected by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	48	62.3	90.6	90.6
	1 chosen	5	6.5	9.4	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Completion of NEWS collected by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	40	51.9	75.5	75.5
	1 chosen	13	16.9	24.5	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Prevalence of HCAI data collected by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	7	9.1	10.8	10.8
	1 chosen	58	75.3	89.2	100.0
	Total	65	84.4	100.0	
Missing	88	11	14.3		
	99	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Prevalence of HCAI data collected by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	55	71.4	84.6	84.6
	1 chosen	10	13.0	15.4	100.0
	Total	65	84.4	100.0	
Missing	88	11	14.3		
	99	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Prevalence of HCAI data collected by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	50	64.9	76.9	76.9
	1 chosen	15	19.5	23.1	100.0
	Total	65	84.4	100.0	
Missing	88	11	14.3		
	99	1	1.3		
	Total	12	15.6		
Total		77	100.0		

Q19. Clinical KPI's collated/analysed by clinical, admin, managers or other staff

Pressure ulcer data analysed by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	18	23.4	28.1	28.1
	1 chosen	46	59.7	71.9	100.0
	Total	64	83.1	100.0	
Missing	88	11	14.3		
	99	2	2.6		
	Total	13	16.9		
Total		77	100.0		

Pressure ulcer data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	46	59.7	71.9	71.9
	1 chosen	18	23.4	28.1	100.0
	Total	64	83.1	100.0	
Missing	88	11	14.3		
	99	2	2.6		
	Total	13	16.9		
Total		77	100.0		

Pressure ulcer data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	25	32.5	39.1	39.1
	1 chosen	39	50.6	60.9	100.0
	Total	64	83.1	100.0	
Missing	88	11	14.3		
	99	2	2.6		
	Total	13	16.9		
Total		77	100.0		

Pressure ulcer data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	56	72.7	87.5	87.5
	1 chosen	8	10.4	12.5	100.0
	Total	64	83.1	100.0	
Missing	88	11	14.3		
	99	2	2.6		
	Total	13	16.9		
Total		77	100.0		

Nutritional data analysed by clinical staff ?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	17	22.1	28.8	28.8
	1 chosen	42	54.5	71.2	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Nutritional data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	43	55.8	72.9	72.9
	1 chosen	16	20.8	27.1	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Nutritional data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	24	31.2	40.7	40.7
	1 chosen	35	45.5	59.3	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Nutritional data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	54	70.1	91.5	91.5
	1 chosen	5	6.5	8.5	100.0
	Total	59	76.6	100.0	
Missing	88	17	22.1		
	99	1	1.3		
	Total	18	23.4		
Total		77	100.0		

Falls data analysed by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	23	29.9	34.8	34.8
	1 chosen	43	55.8	65.2	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Falls data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	46	59.7	69.7	69.7
	1 chosen	20	26.0	30.3	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Falls data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	23	29.9	34.8	34.8
	1 chosen	43	55.8	65.2	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Falls data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	59	76.6	89.4	89.4
	1 chosen	7	9.1	10.6	100.0
	Total	66	85.7	100.0	
Missing	88	9	11.7		
	99	2	2.6		
	Total	11	14.3		
Total		77	100.0		

Hand hygiene data analysed by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	23	29.9	31.9	31.9
	1 chosen	49	63.6	68.1	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Hand hygiene data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	54	70.1	75.0	75.0
	1 chosen	18	23.4	25.0	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Hand hygiene data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	27	35.1	37.5	37.5
	1 chosen	45	58.4	62.5	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Hand hygiene data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	67	87.0	93.1	93.1
	1 chosen	5	6.5	6.9	100.0
	Total	72	93.5	100.0	
Missing	88	4	5.2		
	99	1	1.3		
	Total	5	6.5		
Total		77	100.0		

Medication error data analysed by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	25	32.5	37.9	37.9
	1 chosen	41	53.2	62.1	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Medication error data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	51	66.2	77.3	77.3
	1 chosen	15	19.5	22.7	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Medication error data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	17	22.1	25.8	25.8
	1 chosen	49	63.6	74.2	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Medication error data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	61	79.2	92.4	92.4
	1 chosen	5	6.5	7.6	100.0
	Total	66	85.7	100.0	
Missing	88	10	13.0		
	99	1	1.3		
	Total	11	14.3		
Total		77	100.0		

Completion of NEWS data analysed by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	15	19.5	28.3	28.3
	1 chosen	38	49.4	71.7	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Completion of NEWS data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	40	51.9	75.5	75.5
	1 chosen	13	16.9	24.5	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Completion of NEWS data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	21	27.3	39.6	39.6
	1 chosen	32	41.6	60.4	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Completion of NEWS data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	49	63.6	92.5	92.5
	1 chosen	4	5.2	7.5	100.0
	Total	53	68.8	100.0	
Missing	88	20	26.0		
	99	4	5.2		
	Total	24	31.2		
Total		77	100.0		

Prevalence of HCAI data analysed by clinical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	16	20.8	25.8	25.8
	1 chosen	46	59.7	74.2	100.0
	Total	62	80.5	100.0	
Missing	88	11	14.3		
	99	4	5.2		
	Total	15	19.5		
Total		77	100.0		

Prevalence of HCAI data analysed by admin or clerical staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	43	55.8	69.4	69.4
	1 chosen	19	24.7	30.6	100.0
	Total	62	80.5	100.0	
Missing	88	11	14.3		
	99	4	5.2		
	Total	15	19.5		
Total		77	100.0		

Prevalence of HCAI data analysed by managerial staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	22	28.6	35.5	35.5
	1 chosen	40	51.9	64.5	100.0
	Total	62	80.5	100.0	
Missing	88	11	14.3		
	99	4	5.2		
	Total	15	19.5		
Total		77	100.0		

Prevalence of HCAI data analysed by other staff?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	56	72.7	90.3	90.3
	1 chosen	6	7.8	9.7	100.0
	Total	62	80.5	100.0	
Missing	88	11	14.3		
	99	4	5.2		
	Total	15	19.5		
Total		77	100.0		

Q21. Organisations that collect patient experience KPI's

Do you use any specific KPI's that reflect the patient experience?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	60	77.9	77.9	77.9
	2 No	17	22.1	22.1	100.0
	Total	77	100.0	100.0	

Q23. KPI use specific to fields of practice

Do you collect KPI's specific to - Mental health?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	21	27.3	37.5	37.5
	2 No	35	45.5	62.5	100.0
	Total	56	72.7	100.0	
Missing	99 missing	21	27.3		
Total		77	100.0		

Do you collect KPI's specific to - Learning/intellectual disability?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	25	32.5	42.4	42.4
	2 No	34	44.2	57.6	100.0
	Total	59	76.6	100.0	
Missing	99 missing	18	23.4		
Total		77	100.0		

Do you collect KPI's specific to - Children's?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	40	51.9	63.5	63.5
	2 No	23	29.9	36.5	100.0
	Total	63	81.8	100.0	
Missing	99 missing	14	18.2		
Total		77	100.0		

Do you collect KPI's specific to – Midwifery?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	45	58.4	73.8	73.8
	2 No	16	20.8	26.2	100.0
	Total	61	79.2	100.0	
Missing	99 missing	15	19.5		
	System	1	1.3		
	Total	16	20.8		
Total		77	100.0		

Do you collect KPI's specific to – Community?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	30	39.0	51.7	51.7
	2 No	28	36.4	48.3	100.0
	Total	58	75.3	100.0	
Missing	99 missing	19	24.7		
Total		77	100.0		

Do you collect KPI's specific to - Other e.g. intensive care, palliative care?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 Yes	37	48.1	63.8	63.8
	2 No	21	27.3	36.2	100.0
	Total	58	75.3	100.0	
Missing	99 missing	19	24.7		
Total		77	100.0		

Q32. Systems used to present KPI data

Manual system used to present data?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	36	46.8	55.4	55.4
	1 chosen	29	37.7	44.6	100.0
	Total	65	84.4	100.0	
Missing	99	12	15.6		
Total		77	100.0		

Balanced Score Card used to present data?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	31	40.3	47.7	47.7
	1 chosen	34	44.2	52.3	100.0
	Total	65	84.4	100.0	
Missing	99	12	15.6		
Total		77	100.0		

Standard databases used to present data?

		Frequency	Percent	Valid Percent	Cumulative %
Valid	0 not chosen	28	36.4	43.1	43.1
	1 chosen	37	48.1	56.9	100.0
	Total	65	84.4	100.0	
Missing	99	12	15.6		
Total		77	100.0		

Q2. **What size of a population does your organisation cover?** Outliers removed

N	Valid	59
	Missing	18
Mean		191209.56
Median		800.00
Std. Deviation		471024.927
Range		3199900
Minimum		100
Maximum		3200000

Appendix 15: Table of miscellaneous data items identified in phase one

Origin of KPI's	Data collection methods	Reporting mechanisms	Care planning tools	Statements	Unclassified	Unclassified
Commissioning Group	Surveys	Board of Directors	I want great care	A plethora	Clinical research	Patient identification
JAG[6] on gastrointestinal endoscopy	Comparison of feedback from children & parents	Reports	What do you expect of nursing staff?	Wide range	Metrics	Dignity and privacy
National Institute Cardiovascular Outcomes	Output from approved centres (*mental health*)	Communication plans	What would you like to happen to you?	Too numerous to mention	IUD *(maternity)*	Theme of cleanliness
All Ireland Project (Dignity Care Intervention)	Ombudsman cases	Attendance at multiagency meetings	Care in your own home: The five must do with me	Monitoring standards work	Numbers *(learning disability)*	Involvement
HIQA inspections	TrolleyGAR	Dashboards	Tell us Ten Things		Recovery *(mental health)*	Older persons data
All nationally mandated KPI's	Audits	Balanced score card	What matters to you?		Mental Capacity Act	Normality *(maternity)*
WHO checklist	PALS feedback	Databases			Autism	Puerperal sepsis
HEAT targets	Resident forums	Quality frameworks			Dental	Fetal anomaly scan
As per clinical care programmes for critical and palliative care	Therapy groups examine impact of programmes on mental health	Judgement Support Framework for Approved Centres			Ventilator related pneumonia	Carbon monoxide/ Carbon dioxide testing *(maternity)*
Matching Michigan -ICU safety programme	We are also developing a Consumer Panel	Patient Transfer Logistics Plan			Brachial Plexus Injury/Fracture*(maternity)*	Protected meal times
NHS Choices	Questionnaires				Domestic abuse	Hysterectomy
Minimum dataset for children's palliative care	Cancer treatment helpline				Noise at night from staff and other patients	Student nurse experience
NICE staffing red flags					Vaccinations	Alcohol and drugs
RCOG					Skin to skin	Thrombophlebitis
PICANET					Vulnerable adult data	Symptom managemen
ICNARC data					Smoking cessation	Oxygen therapy
					Vitamin D	Impressions

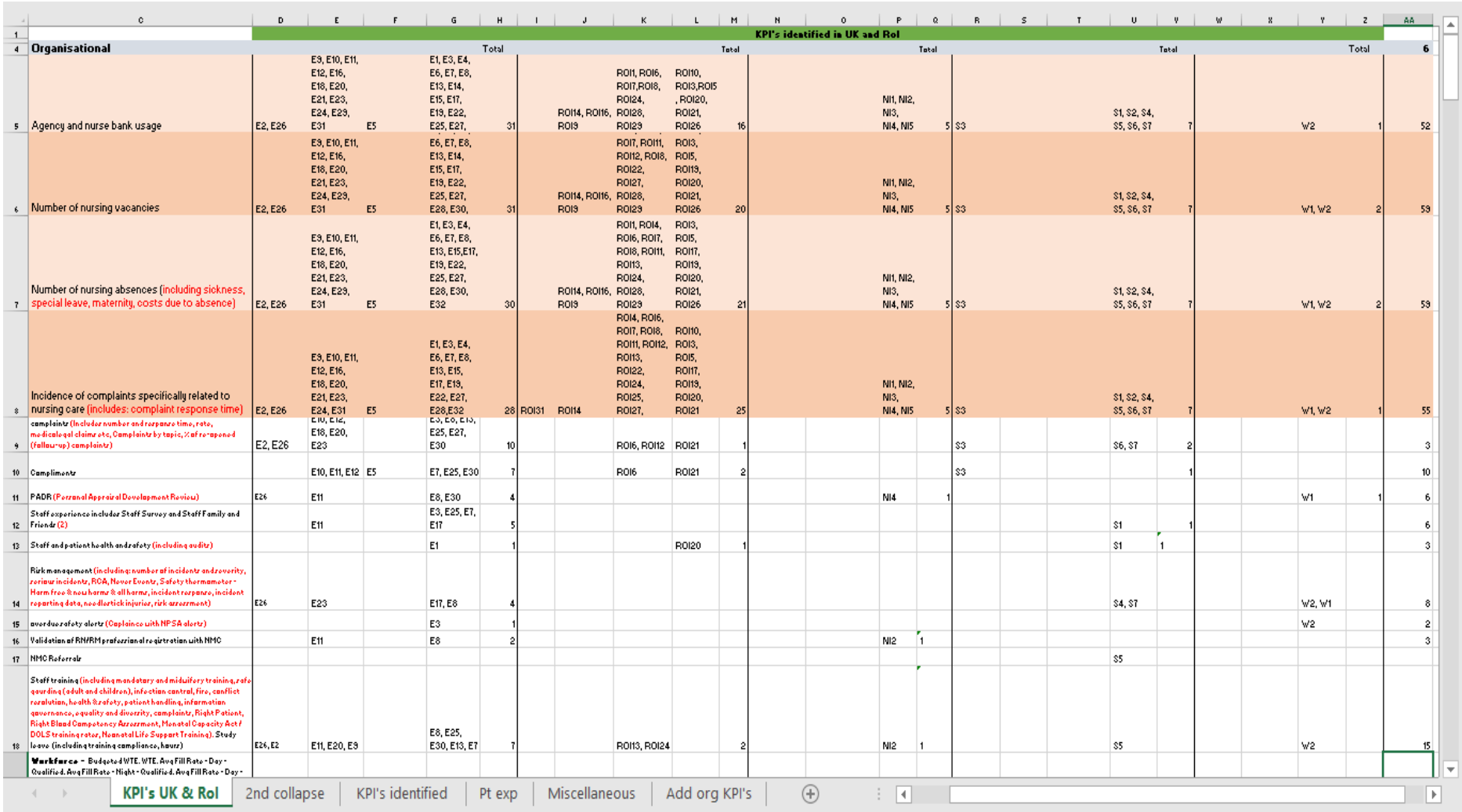
[6] See List of Abbreviations for further information on contractions in this table.

Appendix 16: Non-nursing and midwifery specific data items

Organisational KPI's	**Clinical KPI's**
The number of Emergency Department (ED) staff currently under an employee relation caseload	% of stroke patients admitted to stroke unit within 4 hours
The ratio between the actual number of patients who die following hospitalisation and the number that would be expected to die on the basis of average national figures	Failure to rescue
The percentage of harm free care	Incidences of behaviour that challenges
Complaint response times	
GP access	Return to theatre
The percentage of patients who were discharged, admitted, transferred from, or died in, the Emergency Department within four hours of arrival.	VTE compliance
DNA's (Did not attend)	Compliance with ward cleaning schedules
Inpatient and outpatient cancellations.	Use of psychotropic drugs
Rate of Medio legal claims	Restraint rate
Compliance with safety/NPSA alerts.	**Mental health KPI's**
Percentage of patients first seen within 14 days of receipt of GP urgent suspected cancer referral	Time taken from referral to mental health liaison team for assessment
Grievances	Incidences of persons self-harming using ligature points
Lengths of stay (LOS)	Compliance with MHA (Mental Health Act)
Delayed transfers	Number of safeguard referrals
Discharges - non-elective and elective	Lithium level monitoring
Locum usage	**Learning/intellectual disability KPI's**
Bed nights for respite	Monthly referrals to service
Waiting times	Monthly referrals to other services
Proportion of mortality reviews	**Children's KPI's**
Morbidity. Maternal and neonatal	Metabolic screening
	Looked after and accommodated children; 27-34 month assessment

Midwifery KPI's	Patient experience KPI's
Place of birth rates	Friends & Family Response Rate
5 minute APGAR rate less than 7 at term	Patient satisfaction with: The efficiency of the service; Treatment.
Birth rates	Patient experience time in ED (children's)
Proportion of women with female genital mutilation	Rating of hospital food
Reducing harm caused by misplaced naso/ oro gastric feeding tubes in babies in neonatal units	How would you rate the overall quality of your care?
Rate of women requiring level 3 care	Number and type of patient opinion postings (Monitor Patient Opinion internet site)
C-section infection rates	The number of patients completing the Patient Safety Thermometer survey
Bookings attended	**Other KPI's**
Projected births per month	Chosen place of death
Number of times unit closed for admissions each month	Intensive Care rates
Number of cases of hypoxic encephalopathy	Intensive Care - Discharge after 10pm
Preterm birth rate	Percentage of people who die at home
Number of cases of meconium aspiration	Mixed sex breaches
No of discharges from caseload over 65, 0-4, 5-17	DNACPR standards compliance (Do not attempt CPR)
Birth weight rate	
Caesarean section Rates	
Mode of birth rates	
Weekly hours of dedicated consultant cover on Labour ward	
Number of still births	
Rate of births in women under 18/over 40	
No of admissions to caseload over 65 years, 0-4 years, 5-17 years	
Induction of labour rate	
Early discharge home rates	
NICU admission rate at term	
Waiting list > 12 weeks	
Incidence of multiple pregnancies	

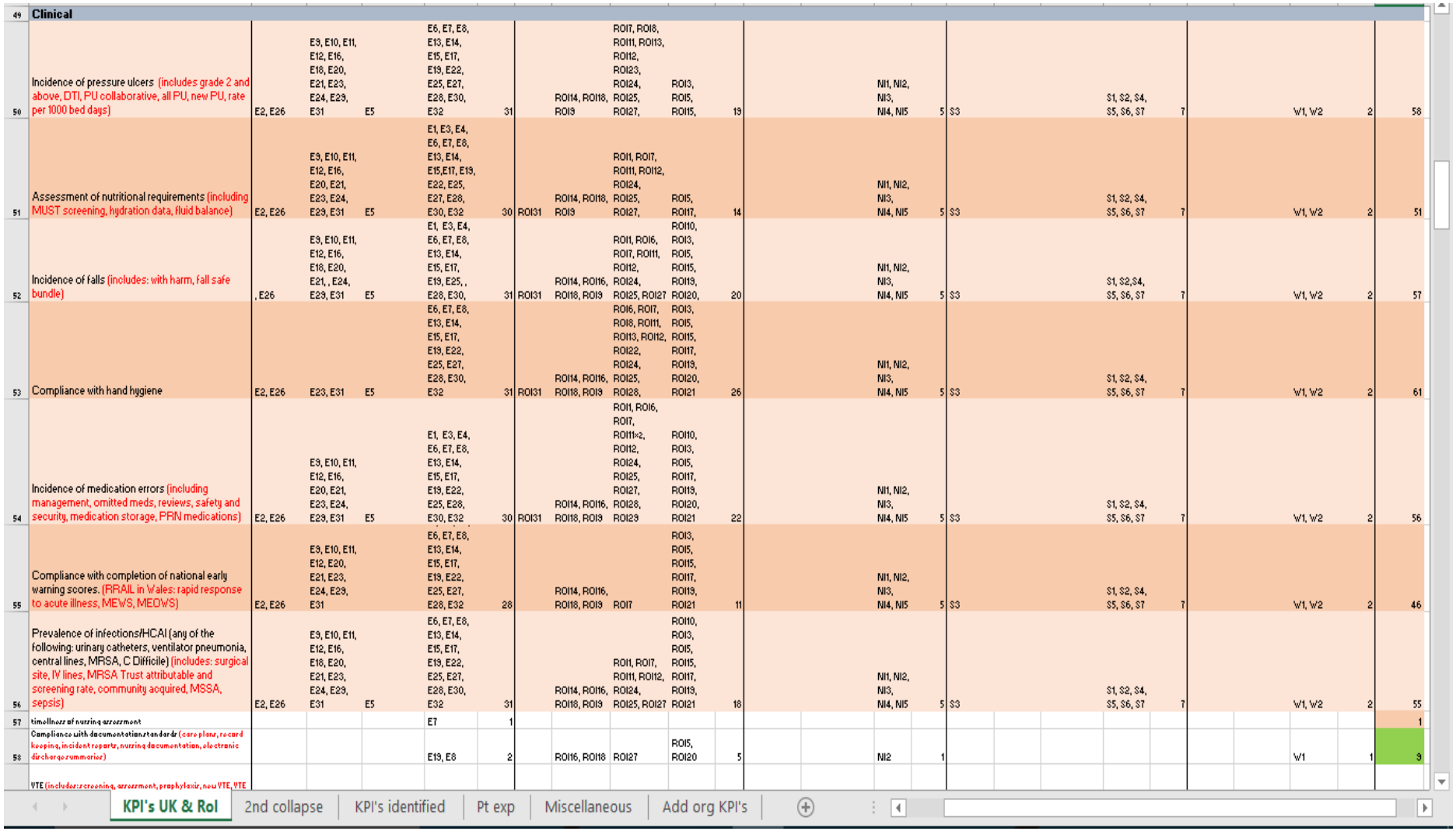
Appendix 17: Sample of the process for grouping KPI's listed in the questionnaires



	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1		KPI's identified in UK and RoI																							
4	**Organisational**					Total					Total				Total					Total				Total	**6**
5	Agency and nurse bank usage	E2, E26	E3, E10, E11, E12, E16, E18, E20, E21, E23, E24, E23, E31	E5	E1, E3, E4, E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E27,	31		RO14, RO16, RO19	RO11, RO16, RO17,RO18, RO124, RO128, RO123	RO110, RO13,RO15 , RO120, RO121, RO126	16			NI1, NI2, NI3, NI4, NI5	5	S3			S1, S2, S4, S5, S6, S7	7			W2	1	52
6	Number of nursing vacancies	E2, E26	E3, E10, E11, E12, E16, E18, E20, E21, E23, E24, E23, E31	E5	E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E27, E28, E30,	31		RO14, RO16, RO19	RO17, RO111, RO112, RO18, RO122, RO127, RO128, RO123	RO13, RO15, RO113, RO120, RO121, RO126	20			NI1, NI2, NI3, NI4, NI5	5	S3			S1, S2, S4, S5, S6, S7	7			W1, W2	2	59
7	Number of nursing absences (including sickness, special leave, maternity, costs due to absence)	E2, E26	E3, E10, E11, E12, E16, E18, E20, E21, E23, E24, E23, E31	E5	E1, E3, E4, E6, E7, E8, E13, E15,E17, E19, E22, E25, E27, E28, E30, E32	30		RO14, RO16, RO19	RO11, RO14, RO16, RO17, RO18, RO111, RO113, RO124, RO128, RO123	RO13, RO15, RO117, RO113, RO120, RO121, RO126	21			NI1, NI2, NI3, NI4, NI5	5	S3			S1, S2, S4, S5, S6, S7	7			W1, W2	2	59
8	Incidence of complaints specifically related to nursing care (includes: complaint response time)	E2, E26	E3, E10, E11, E12, E16, E18, E20, E21, E23, E24, E31	E5	E1, E3, E4, E6, E7, E8, E13, E15, E17, E22, E27, E28,E32	28	RO131	RO114	RO14, RO16, RO17, RO18, RO111, RO112, RO113, RO122, RO124, RO125, RO127,	RO110, RO13, RO15, RO117, RO113, RO120, RO121	25			NI1, NI2, NI3, NI4, NI5	5	S3			S1, S2, S4, S5, S6, S7	7			W1, W2	1	55
9	complaints (Includes number and response time, rate, medicolegal claims etc, Complaints by topic, % of re-opened (follow-up) complaints)	E2, E26	E10, E12, E18, E20, E23		E3, E9, E10, E25, E27, E30	10			RO16, RO112	RO121	1					S3			S6, S7	2					3
10	Compliments		E10, E11, E12	E5	E7, E25, E30	7			RO16	RO121	2					S3				1					10
11	PADR (Personal Appraisal Development Review)	E26	E11		E8, E30	4								NI4	1								W1	1	6
12	Staff experience includes Staff Survey and Staff Family and Friends (2)		E11		E3, E25, E7, E17	5													S1	1					6
13	Staff and patient health and safety (including audit)				E1	1				RO120	1								S1	1					3
14	Risk management (including: number of incidents and severity, serious incidents, RCA, Never Events, Safety thermometer - Harm free & new harms & all harms, incident response, incident reporting data, needlestick injuries, risk assessment)	E26	E23		E17, E8	4													S4, S7				W2, W1		8
15	overdue safety alerts (Compliance with NPSA alerts)				E3	1																	W2		2
16	Validation of RN/RM professional registration with NMC		E11		E8	2								NI2	1										3
17	NMC Referrals																		S5						
18	Staff training (including mandatory and midwifery training, safeguarding (adult and children), infection control, fire, conflict resolution, health & safety, patient handling, information governance, equality and diversity, complaints, Right Patient, Right Blood Competency Assessment, Neonatal Capacity Act / DOLS training rates, Neonatal Life Support Training). Study leave (including training compliance, hours)	E26, E2	E11, E20, E9		E8, E25, E30, E13, E7	7			RO113, RO124		2			NI2	1				S5				W2		15
	Workforce - Budgeted WTE. WTE. Avg Fill Rate - Day - Qualified. Avg Fill Rate - Night - Qualified. Avg Fill Rate - Day -																								

KPI's UK & RoI | 2nd collapse | KPI's identified | Pt exp | Miscellaneous | Add org KPI's

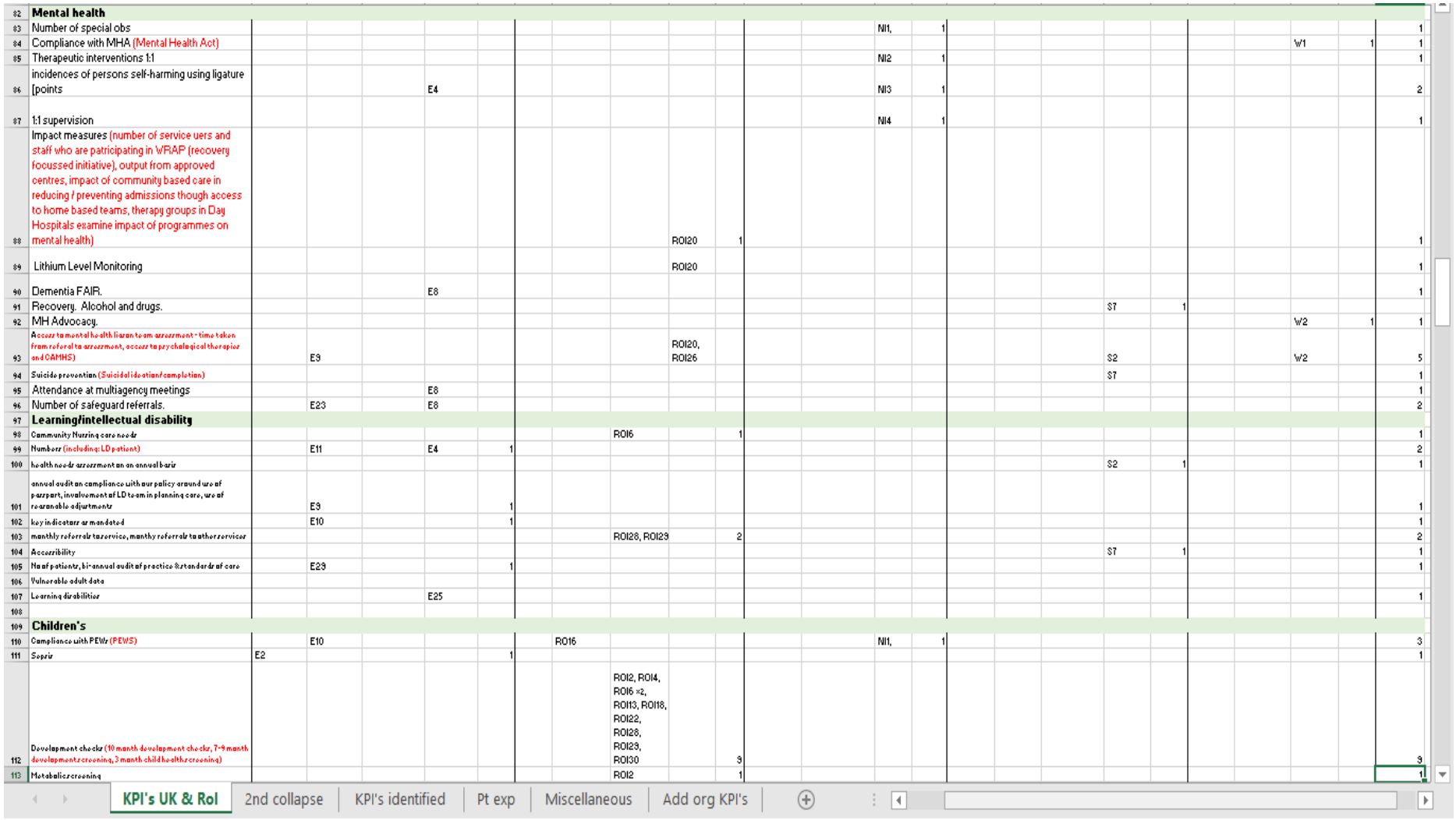
Appendix 17: continued



49	**Clinical**																															
50	Incidence of pressure ulcers (includes grade 2 and above, DTI, PU collaborative, all PU, new PU, rate per 1000 bed days)	E2, E26	E3, E10, E11, E12, E16, E18, E20, E21, E23, E24, E23, E31	E5	E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E27, E28, E30, E32	31	ROI14, ROI18, ROI9	ROI7, ROI8, ROI11, ROI13, ROI12, ROI23, ROI24, ROI25, ROI27,	ROI3, ROI5, ROI15,	19	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2, S4, S5, S6, S7	7	W1, W2	2	58
51	Assessment of nutritional requirements (including MUST screening, hydration data, fluid balance)	E2, E26	E3, E10, E11, E12, E16, E20, E21, E23, E24, E23, E31	E5	E1, E3, E4, E6, E7, E8, E13, E14, E15,E17, E19, E22, E25, E27, E28, E30, E32	30	ROI31 ROI14, ROI18, ROI9	ROI1, ROI7, ROI11, ROI12, ROI24, ROI25, ROI27,	ROI5, ROI17,	14	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2, S4, S5, S6, S7	7	W1, W2	2	51
52	Incidence of falls (includes: with harm, fall safe bundle)	, E26	E3, E10, E11, E12, E16, E18, E20, E21, , E24, E23, E31	E5	E1, E3, E4, E6, E7, E8, E13, E14, E15, E17, E19, E25, , E28, E30,	31	ROI31 ROI14, ROI16, ROI18, ROI9	ROI1, ROI6, ROI7, ROI11, ROI12, ROI24, ROI25, ROI27	ROI10, ROI3, ROI5, ROI15, ROI19, ROI20,	20	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2,S4, S5, S6, S7	7	W1, W2	2	57
53	Compliance with hand hygiene	E2, E26	E23, E31	E5	E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E27, E28, E30, E32	31	ROI31 ROI14, ROI16, ROI18, ROI9	ROI6, ROI7, ROI8, ROI11, ROI13, ROI12, ROI22, ROI24, ROI25, ROI28,	ROI3, ROI5, ROI15, ROI17, ROI19, ROI20, ROI21	26	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2, S4, S5, S6, S7	7	W1, W2	2	61
54	Incidence of medication errors (including management, omitted meds, reviews, safety and security, medication storage, PRN medications)	E2, E26	E3, E10, E11, E12, E16, E20, E21, E23, E24, E23, E31	E5	E1, E3, E4, E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E28, E30, E32	30	ROI31 ROI14, ROI16, ROI18, ROI9	ROI1, ROI6, ROI7, ROI11×2, ROI12, ROI24, ROI25, ROI27, ROI28, ROI23	ROI10, ROI3, ROI5, ROI17, ROI19, ROI20, ROI21	22	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2, S4, S5, S6, S7	7	W1, W2	2	56
55	Compliance with completion of national early warning scores. (RRAIL in Wales: rapid response to acute illness, MEWS, MEOWS)	E2, E26	E3, E10, E11, E12, E20, E21, E23, E24, E23, E31		E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E27, E28, E32	28	ROI14, ROI16, ROI18, ROI9	ROI7	ROI3, ROI5, ROI15, ROI17, ROI19, ROI21	11	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2, S4, S5, S6, S7	7	W1, W2	2	46
56	Prevalence of infections/HCAI (any of the following: urinary catheters, ventilator pneumonia, central lines, MRSA, C Difficile) (includes: surgical site, IV lines, MRSA Trust attributable and screening rate, community acquired, MSSA, sepsis)	E2, E26	E3, E10, E11, E12, E16, E18, E20, E21, E23, E24, E23, E31	E5	E6, E7, E8, E13, E14, E15, E17, E19, E22, E25, E27, E28, E30, E32	31	ROI14, ROI16, ROI18, ROI9	ROI1, ROI7, ROI11, ROI12, ROI24, ROI25, ROI27	ROI10, ROI3, ROI5, ROI15, ROI17, ROI19, ROI21	18	NI1, NI2, NI3, NI4, NI5	5	S3	S1, S2, S4, S5, S6, S7	7	W1, W2	2	55
57	timeliness of nursing assessment				E7	1												1
58	Compliance with documentation standards (care plans, record keeping, incident reports, nursing documentation, electronic discharge summaries)				E19, E8	2	ROI16, ROI18	ROI27	ROI5, ROI20	5	NI2	1				W1	1	9
	VTE (includes: screening, assessment, prophylaxis, new VTE, VTE																	

KPI's UK & RoI | 2nd collapse | KPI's identified | Pt exp | Miscellaneous | Add org KPI's

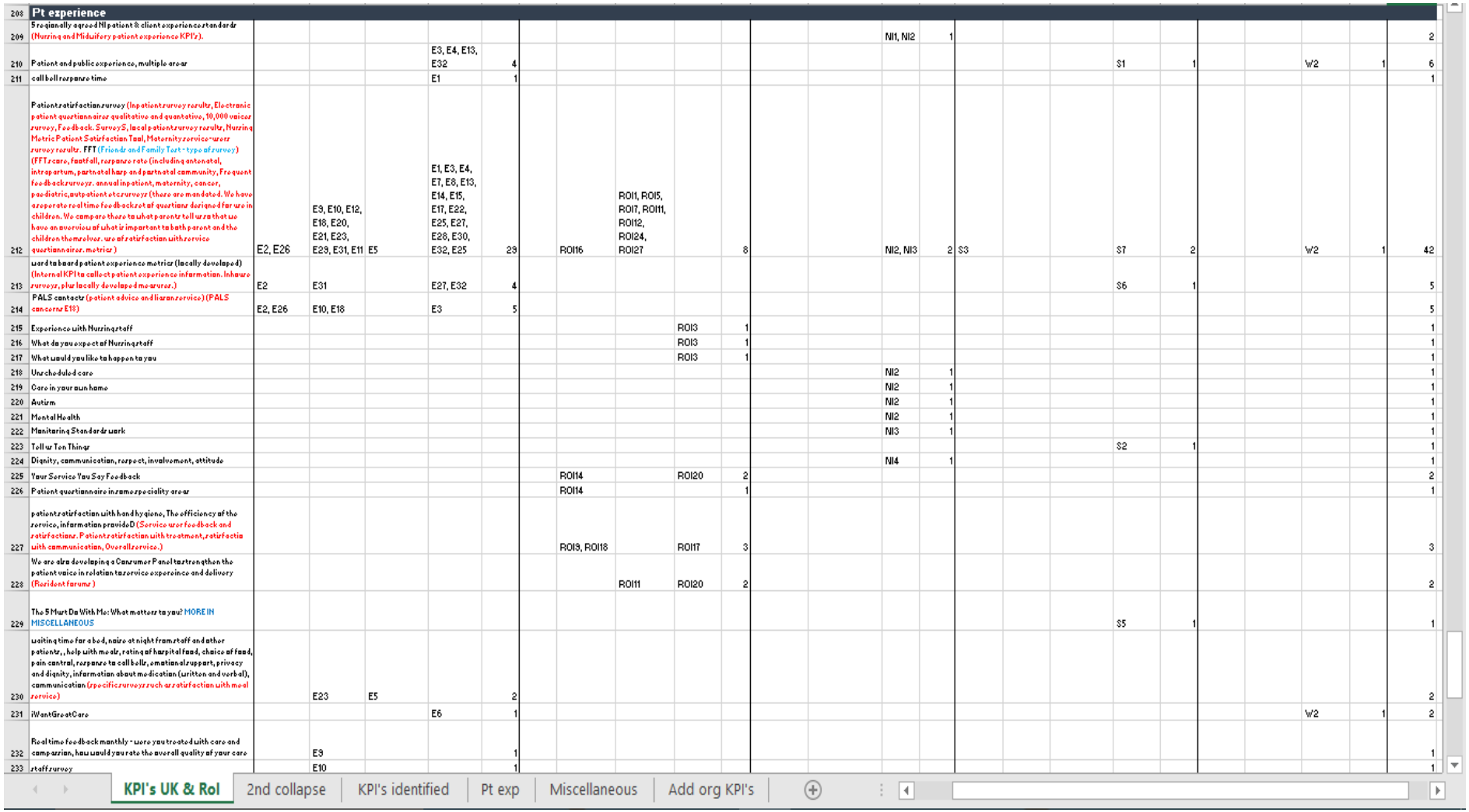
Appendix 17: continued



82	**Mental health**																					
83	Number of special obs												NI1,	1								1
84	Compliance with MHA (Mental Health Act)																			W1	1	1
85	Therapeutic interventions 1:1												NI2	1								1
86	incidences of persons self-harming using ligature [points				E4								NI3	1								2
87	1:1 supervision												NI4	1								1
88	Impact measures (number of service uers and staff who are patricipating in WRAP (recovery focussed initiative), output from approved centres, impact of community based care in reducing / preventing admissions though access to home based teams, therapy groups in Day Hospitals examine impact of programmes on mental health)								ROI20	1												1
89	Lithium Level Monitoring								ROI20													1
90	Dementia FAIR.				E8																	1
91	Recovery. Alcohol and drugs.															S7	1					
92	MH Advocacy.																			W2	1	1
93	Access to mental health liaison team assessment - time taken from referal to assessment, access to psychological therapies and CAMHS)		E9						ROI20, ROI26							S2				W2		5
94	Suicide prevention (Suicidal ideation/completion)															S7						1
95	Attendance at multiagency meetings				E8																	1
96	Number of safeguard referrals.		E23		E8																	2
97	**Learning/intellectual disability**																					
98	Community Nursing care needs								ROI6		1											1
99	Numbers (including LD patient)		E11		E4	1																2
100	health needs assessment on an annual basis															S2	1					1
101	annual audit on compliance with our policy around use of passport, involvement of LD team in planning care, use of reasonable adjustments		E9			1																1
102	key indicators as mandated		E10			1																1
103	monthly referral to service, monthly referral to other services								ROI28, ROI23		2											2
104	Accessibility															S7	1					1
105	No of patients, bi-annual audit of practice & standards of care		E23			1																1
106	Vulnerable adult data																					
107	Learning disabilities				E25																	1
108																						
109	**Children's**																					
110	Compliance with PEWs (PEWS)		E10					RO16					NI1,	1								3
111	Sepsis	E2				1																1
112	Development checks (10 month development checks, 7-9 month development screening, 3 month child health screening)								ROI2, ROI4, ROI6 ×2, ROI13, ROI18, ROI22, ROI28, ROI29, ROI30		9											9
113	Metabolic screening								ROI2		1											1

KPI's UK & RoI | 2nd collapse | KPI's identified | Pt exp | Miscellaneous | Add org KPI's

Appendix 17: continued

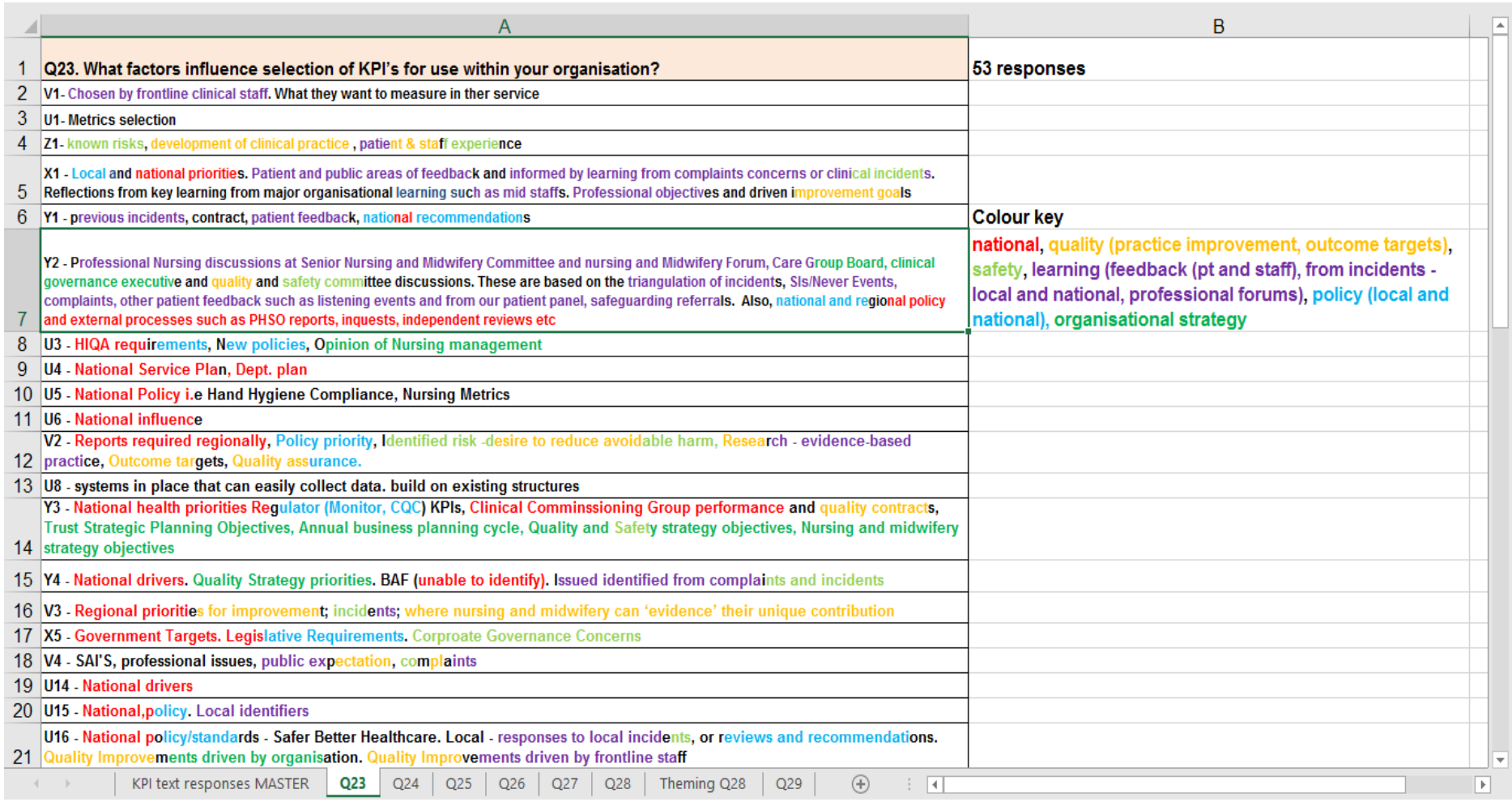


208	**Pt experience**																								
209	Sregionally agreed NI patient & client experience standards (Nursing and Midwifery patient experience KPI's).														NI1, NI2	1									2
210	Patient and public experience, multiple areas				E3, E4, E13, E32	4														S1	1			W2	1	6
211	call bell response time				E1	1																				1
212	Patient satisfaction survey (Inpatient survey results, Electronic patient questionnaires qualitative and quantative, 10,000 voices survey, Feedback. SurveyS, local patient survey results, Nursing Metric Patient Satisfaction Tool, Maternity service users survey results. FFT (Friends and Family Test - type of survey) (FFT care, footfall, response rate (including antenatal, intrapartum, partnatal harp and partnatal community, Frequent feedback surveys. annual inpatient, maternity, cancer, paediatric, autpatient etc surveys (there are mandated. We have a seperate real time feedback set of questions designed for use in children. We compare there to what parents tell us so that we have an overview of what is important to both parent and the children themselves. use of satisfaction with service questionnaires. metrics)	E2, E26		E9, E10, E12, E18, E20, E21, E23, E29, E31, E11	E5	E1, E3, E4, E7, E8, E13, E14, E15, E17, E22, E25, E27, E28, E30, E32, E25	23		ROI16		ROI1, ROI5, ROI7, ROI11, ROI12, ROI24, ROI27		8			NI2, NI3	2	S3		S7	2		W2	1	42
213	ward to board patient experience metrics (locally developed) (Internal KPI to collect patient experience information. Inhouse surveys, plus locally developed measures.)	E2		E31		E27, E32	4													S6	1					5
214	PALS contacts (patient advice and liaison service) (PALS concerns E18)	E2, E26		E10, E18		E3	5																			5
215	Experience with Nursing staff										ROI3	1														1
216	What do you expect of Nursing staff										ROI3	1														1
217	What would you like to happen to you										ROI3	1														1
218	Unscheduled care														NI2	1										1
219	Care in your own home														NI2	1										1
220	Autism														NI2	1										1
221	Mental Health														NI2	1										1
222	Monitoring Standards work														NI3	1										1
223	Tell us Ten Things																			S2	1					1
224	Dignity, communication, respect, involvement, attitude														NI4	1										1
225	Your Service Your Say Feedback								ROI14		ROI20	2														2
226	Patient questionnaire in same speciality areas								ROI14			1														1
227	patient satisfaction with hand hygiene, The efficiency of the service, information provided (Service user feedback and satisfactions. Patient satisfaction with treatment, satisfactio with communication, Overall service.)								ROI9, ROI18		ROI17	3														3
228	We are also developing a Consumer Panel to strengthen the patient voice in relation to service experience and delivery (Resident forums)									ROI11	ROI20	2														2
229	The 5 Must Do With Me: What matters to you? MORE IN MISCELLANEOUS																			S5	1					1
230	waiting time for a bed, noise at night from staff and other patients, , help with meals, rating of hospital food, choice of food, pain control, response to call bells, emotional support, privacy and dignity, information about medication (written and verbal), communication (specific surveys such as satisfaction with meal service)			E23	E5		2																			2
231	iWantGreatCare					E6	1																	W2	1	2
232	Real time feedback monthly - were you treated with care and compassion, how would you rate the overall quality of your care			E9			1																			1
233	staff survey			E10			1																			1

KPI's UK & RoI | 2nd collapse | KPI's identified | Pt exp | Miscellaneous | Add org KPI's

Appendix 18: Sample screen shots of phase one content analysis

Screen shot of factors influencing the selection of KPI's

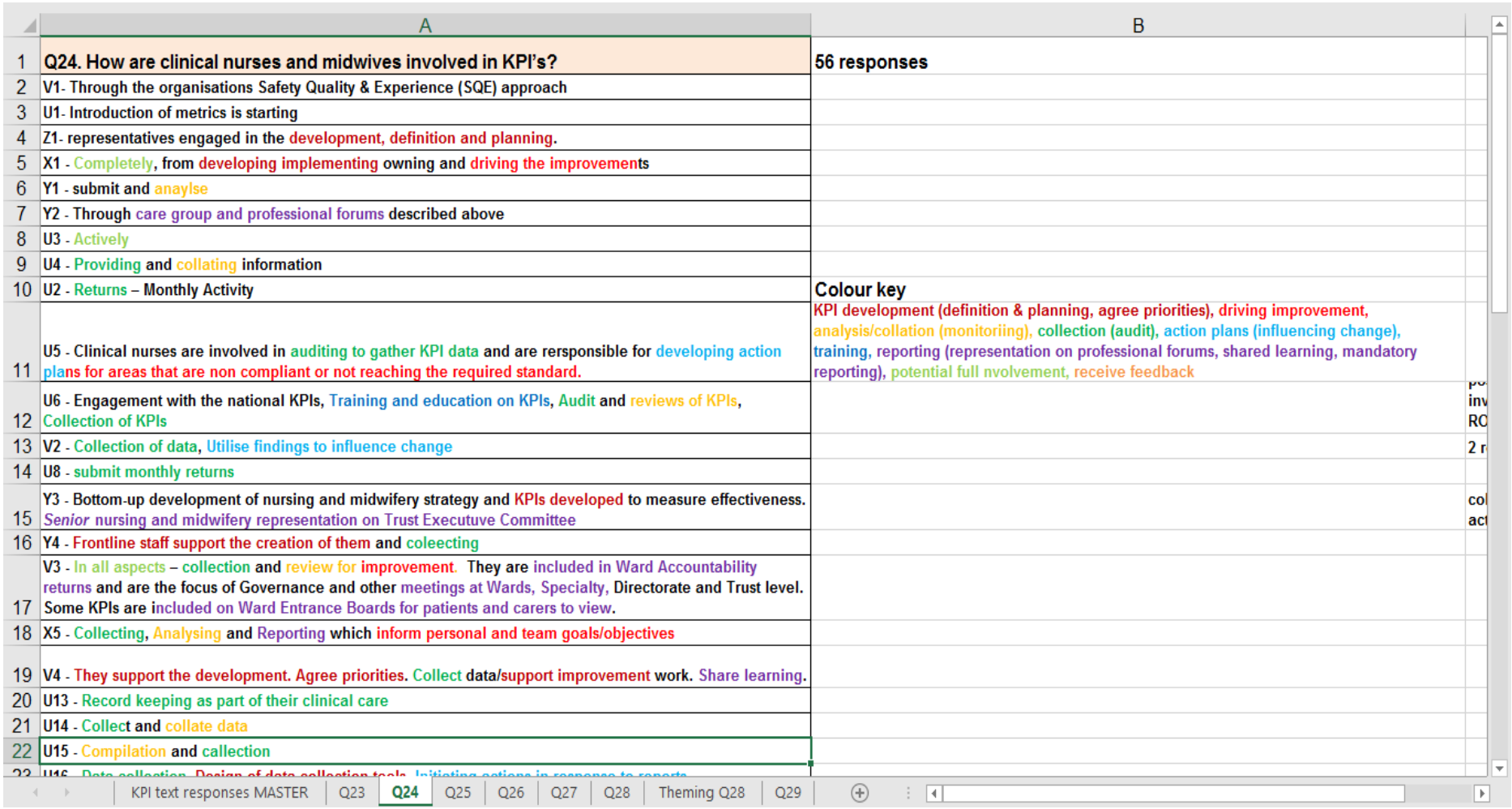


	A	B
1	**Q23. What factors influence selection of KPI's for use within your organisation?**	**53 responses**
2	V1- Chosen by frontline clinical staff. What they want to measure in ther service	
3	U1- Metrics selection	
4	Z1- known risks, development of clinical practice , patient & staff experience	
5	X1 - Local and national priorities. Patient and public areas of feedback and informed by learning from complaints concerns or clinical incidents. Reflections from key learning from major organisational learning such as mid staffs. Professional objectives and driven improvement goals	
6	Y1 - previous incidents, contract, patient feedback, national recommendations	**Colour key**
7	Y2 - Professional Nursing discussions at Senior Nursing and Midwifery Committee and nursing and Midwifery Forum, Care Group Board, clinical governance executive and quality and safety committee discussions. These are based on the triangulation of incidents, SIs/Never Events, complaints, other patient feedback such as listening events and from our patient panel, safeguarding referrals. Also, national and regional policy and external processes such as PHSO reports, inquests, independent reviews etc	national, quality (practice improvement, outcome targets), safety, learning (feedback (pt and staff), from incidents - local and national, professional forums), policy (local and national), organisational strategy
8	U3 - HIQA requirements, New policies, Opinion of Nursing management	
9	U4 - National Service Plan, Dept. plan	
10	U5 - National Policy i.e Hand Hygiene Compliance, Nursing Metrics	
11	U6 - National influence	
12	V2 - Reports required regionally, Policy priority, Identified risk -desire to reduce avoidable harm, Research - evidence-based practice, Outcome targets, Quality assurance.	
13	U8 - systems in place that can easily collect data. build on existing structures	
14	Y3 - National health priorities Regulator (Monitor, CQC) KPIs, Clinical Comminssioning Group performance and quality contracts, Trust Strategic Planning Objectives, Annual business planning cycle, Quality and Safety strategy objectives, Nursing and midwifery strategy objectives	
15	Y4 - National drivers. Quality Strategy priorities. BAF (unable to identify). Issued identified from complaints and incidents	
16	V3 - Regional priorities for improvement; incidents; where nursing and midwifery can 'evidence' their unique contribution	
17	X5 - Government Targets. Legislative Requirements. Corproate Governance Concerns	
18	V4 - SAI'S, professional issues, public expectation, complaints	
19	U14 - National drivers	
20	U15 - National,policy. Local identifiers	
21	U16 - National policy/standards - Safer Better Healthcare. Local - responses to local incidents, or reviews and recommendations. Quality Improvements driven by organisation. Quality Improvements driven by frontline staff	

KPI text responses MASTER | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Theming Q28 | Q29

Appendix 18: continued

Screen shot of ways in which nurses and midwives are involved in KPI use

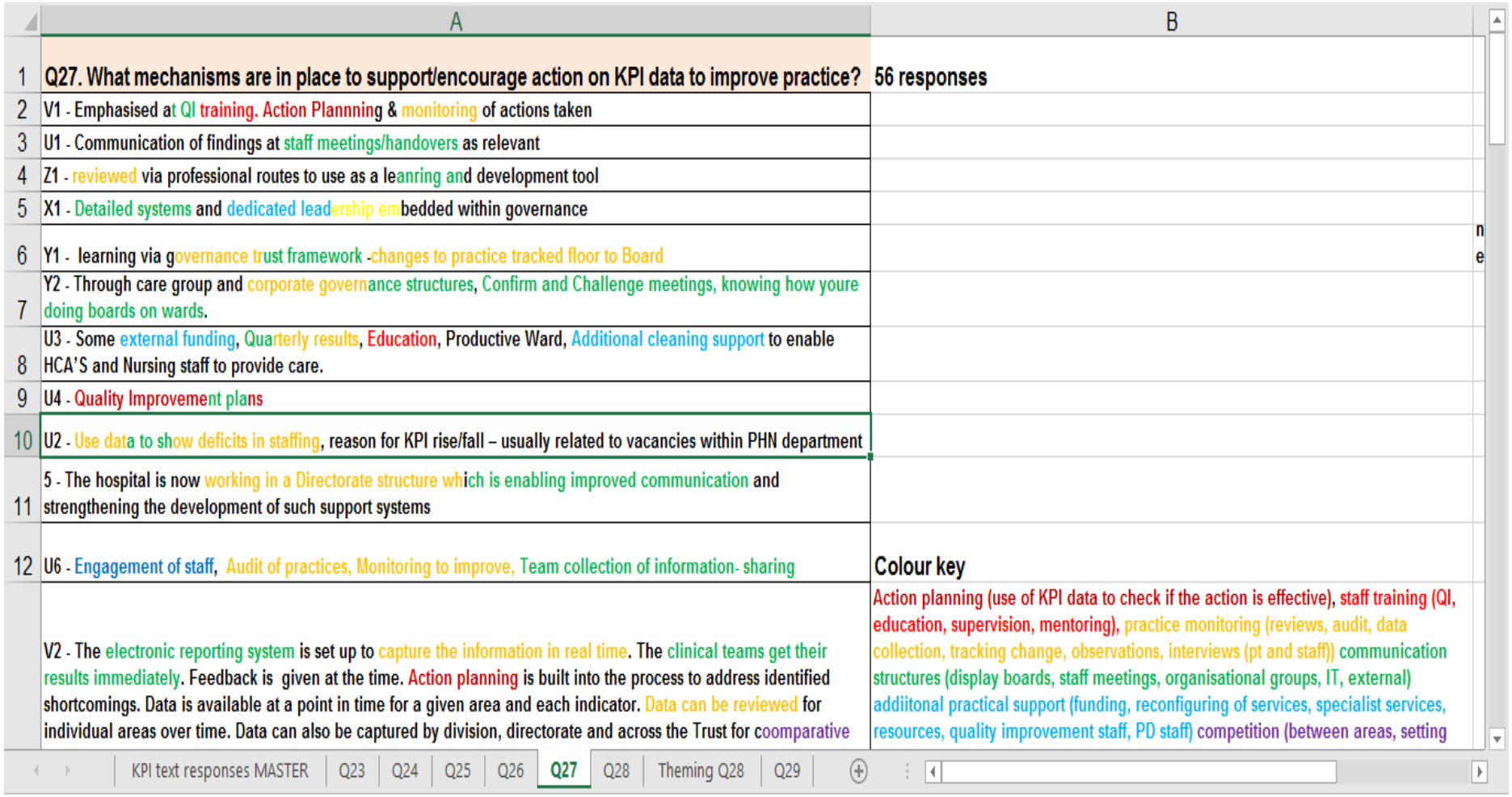


	A	B
1	**Q24. How are clinical nurses and midwives involved in KPI's?**	**56 responses**
2	V1- Through the organisations Safety Quality & Experience (SQE) approach	
3	U1- Introduction of metrics is starting	
4	Z1- representatives engaged in the development, definition and planning.	
5	X1 - Completely, from developing implementing owning and driving the improvements	
6	Y1 - submit and anaylse	
7	Y2 - Through care group and professional forums described above	
8	U3 - Actively	
9	U4 - Providing and collating information	
10	U2 - Returns – Monthly Activity	**Colour key**
11	U5 - Clinical nurses are involved in auditing to gather KPI data and are rersponsible for developing action plans for areas that are non compliant or not reaching the required standard.	KPI development (definition & planning, agree priorities), driving improvement, analysis/collation (monitoriing), collection (audit), action plans (influencing change), training, reporting (representation on professional forums, shared learning, mandatory reporting), potential full nvolvement, receive feedback
12	U6 - Engagement with the national KPIs, Training and education on KPIs, Audit and reviews of KPIs, Collection of KPIs	
13	V2 - Collection of data, Utilise findings to influence change	
14	U8 - submit monthly returns	
15	Y3 - Bottom-up development of nursing and midwifery strategy and KPIs developed to measure effectiveness. *Senior* nursing and midwifery representation on Trust Executuve Committee	
16	Y4 - Frontline staff support the creation of them and coleecting	
17	V3 - In all aspects – collection and review for improvement. They are included in Ward Accountability returns and are the focus of Governance and other meetings at Wards, Specialty, Directorate and Trust level. Some KPIs are included on Ward Entrance Boards for patients and carers to view.	
18	X5 - Collecting, Analysing and Reporting which inform personal and team goals/objectives	
19	V4 - They support the development. Agree priorities. Collect data/support improvement work. Share learning.	
20	U13 - Record keeping as part of their clinical care	
21	U14 - Collect and collate data	
22	U15 - Compilation and callection	

KPI text responses MASTER | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Theming Q28 | Q29

Appendix 18: continued

Screen shot of mechanisms used to support/encourage action on KPI's



	A	B
1	**Q27. What mechanisms are in place to support/encourage action on KPI data to improve practice?**	**56 responses**
2	V1 - Emphasised at QI training. Action Plannning & monitoring of actions taken	
3	U1 - Communication of findings at staff meetings/handovers as relevant	
4	Z1 - reviewed via professional routes to use as a leanring and development tool	
5	X1 - Detailed systems and dedicated leadership embedded within governance	
6	Y1 - learning via governance trust framework -changes to practice tracked floor to Board	
7	Y2 - Through care group and corporate governance structures, Confirm and Challenge meetings, knowing how youre doing boards on wards.	
8	U3 - Some external funding, Quarterly results, Education, Productive Ward, Additional cleaning support to enable HCA'S and Nursing staff to provide care.	
9	U4 - Quality Improvement plans	
10	U2 - Use data to show deficits in staffing, reason for KPI rise/fall – usually related to vacancies within PHN department	
11	5 - The hospital is now working in a Directorate structure which is enabling improved communication and strengthening the development of such support systems	
12	U6 - Engagement of staff, Audit of practices, Monitoring to improve, Team collection of information- sharing	**Colour key**
	V2 - The electronic reporting system is set up to capture the information in real time. The clinical teams get their results immediately. Feedback is given at the time. Action planning is built into the process to address identified shortcomings. Data is available at a point in time for a given area and each indicator. Data can be reviewed for individual areas over time. Data can also be captured by division, directorate and across the Trust for coomparative	Action planning (use of KPI data to check if the action is effective), staff training (QI, education, supervision, mentoring), practice monitoring (reviews, audit, data collection, tracking change, observations, interviews (pt and staff)) communication structures (display boards, staff meetings, organisational groups, IT, external) addiitonal practical support (funding, reconfiguring of services, specialist services, resources, quality improvement staff, PD staff) competition (between areas, setting

KPI text responses MASTER | Q23 | Q24 | Q25 | Q26 | Q27 | Q28 | Theming Q28 | Q29

Appendix 19: Practice improvements resulting from use of KPI data

Aspect of practice measured and number of examples	**Action taken and/or improvement achieved**
Number of infections n=5 Time taken to isolate patient n=1	• Reduction in bloodstream MRSA • MRSA reduced through use of the Saving Lives audits • Increase in infections triggers use of root cause analysis (RCA) • Training and education. Extra resources. Equipment. • RCA used to improve dressings and care of peripheral and central lines • Reduction in time to isolate – decreased delays
Number of hospital-acquired pressure ulcers n=10	• Informed use of risk assessments in reporting and management • Implementation of new reporting system and staff training • Implementation of a skin bundle • Implementation of pressure ulcer collaborative • Root cause analysis resulted in Trust wide action plan • Implementation of specific campaign • Escalation process devised • Development of tissue viability team and implementation of '300 days without pressure ulcers' initiative
Number of prescribed medications not administered n=2	• Strengthened training in relation to diabetes • Omitted medications-an action plan/learning programme was put in place leading to a reduction in "blanks" doses
Delay time in recording observations n=1	• Implementation of RCA reduced delay in recording of cardiovascular observations
Number of falls n=6	• Prevention – significant improvement • Reduction due to use of Improvement Methodology • Reduction following introduction of improvement plan and review of compliance • Focused initiatives in identified areas of need • Escalation process devised • Strengthened compliance with assessment and interventions
Compliance with hand hygiene n=1	• Multi-disciplinary taskforce established
Number of delayed notifications of post-natal discharges n=2	• New system of e-reporting of discharge notifications • Late notification of birth – improvement plan between hospital and community led to reduced incidents and targets being met

Aspect of practice measured and number of examples	**Action taken and/or improvement achieved**
Documentation n=3	• Introduction of audits to improve recording of care • Use of cycles of 'Plan, Do, Study and Act' • Multi-disciplinary team care planning improved following presentations, audits and the development of a guidance document
Breastfeeding rates n=1 Infant nutrition n=1	• Appointment of lactation consultant • Targeted work by matron
Complaints and incident reports n=1	• Improved the quality of responses to complaints. Additionally, complaints and incident reports have been used to aid decisions on service investment
Number of Did Not Attends n=1	• Review of DNA policy and practice
Care bundle for children with mechanical devices in situ n=1	• Introduction led to improved care of children with mechanical devices in situ
Number of pregnant women taking folic acid supplements n=1	• Appointment of a clinical midwife specialist
Completion of child health development checks n=1	• Established as a key priority with additional training and focus on meeting national Standards
Number of epidural requests facilitated n=1	• Provision of epidurals on request improved
Family and Friends Test feedback n=1	• Reduced night time noise
Number of temporary staff employed to support 1:1 patient care n=1	• Analysis and costing led to creation of a dedicated team to meet this need
Caesarean section rates n=1	• Closer monitoring, on-going audit, increased consultant involvement, individual C-section cases scrutinised leading to reduction in C-sections

Appendix 20: Supplementary sub-theme quotations

Voiceless in the national conversation

DoN8	From our commissioning group we have over 300 key performance metrics that we're held to account for. Now, I would argue that not all of them are going to impact on outcome for patients, so we should be really slick and we should get slicker at looking at outcome metrics... Instead of just counting the same old stuff for the same old reasons
DoN8	I think sometimes it's people sat in a dark room, at times, coming up with potential 'would look good' rather than focusing on the outcomes and where aren't we meeting our outcomes then how can we drive up those improvements by having some key performance metrics
DoN8	I've challenged the [commissioners] several times around some of those public health KPI's in terms of, OK, so we've been doing this now for two years, so what impact has that had? Cause arguably, if it hasn't, let's stop and let's do something different. Cause that's valuable time of healthcare professionals in an acute setting... should we not be doing this somewhere else?
DoN6	There is a conversation to be had nationally around maternity KPI's because there's such a variation across the country. There's no set standard and heads of midwifery constantly moan about it
DoN5	A commissioner might want to drive down caesarean rates because natural childbirth is safer, and is better for all concerned. However, in certain places, ...the choice of the mother might be that she doesn't want to have natural childbirth... And so we might be penalised for something that could be seen as mother's choice. ...even if they're steeped in evidence base
DoN4	Our performance, our work if you like, is dictated to by the performance targets the government set. They don't in themselves tell you how well an organisation is functioning
DoN3	One of the criticisms of a number of the regionally mandated KPI's. They are focused on process as opposed to outcome and I understand why, cos it's back to the point… it's easier to measure the process as it is to measure the outcome. If a particular area of that [NEWS] chart isn't completed in a particular box, does that truly impact on the outcome or not? But it will be reflected in your level of compliance against that KPI.
DoN3	The regionally mandated nursing and midwifery KPI's are very acute focused and the [regional organisations] cover a whole lot more than the acute world
DoN1	The feedback that I would get in relation to "in [that] time frame, there's a lot of work that goes on in ED and if we overshoot it then that's a criticism". However, there's an awful lot of other things that we've achieved… But it does give people a target to work with. It does create efficiency within the system. Does it make it safe? No it doesn't. Does it make it better? Not necessarily sure that it does
DoN1	The relevance of the KPI [can be a challenge] and the question about "what are we actually measuring this for if we can't do anything about it?" When they come from outside of the organisation but they don't always relate to what that service is bringing to the patients.
SM1	If you measure length of bed stay and you say, oh we're down to 3.5 days, that doesn't take account of the people that were readmitted because they went home too early. So reporting it in its basic form is not, I don't think it's useful. So I think it's given KPI's a bad name, put it that way maybe
SM8	"Did you at any point in your labour feel left alone and vulnerable?" It's a really leading question because… I felt vulnerable and alone even when I wasn't left alone... and there are times when even if a midwife is truly with woman and she's in that room 99 percent of the time, there's times when she's got to nip out to have a toilet break or go and update the board or update what's going on and get help and go and get other supplies... it just feels a bit wrong somehow and I don't see what quality it adds... "Was your partner allowed to stay with you during the birth?" What value does that give you? [yes/no answer]
SM8	The only way that you get that [commissioner feedback on data] is if they… think you're doing not very well
CA1	[to improve KPI use] I think the big thing is..., to involve the people that it's going to affect... Because you get what matters to those people… And I think… in general, people don't consider the people who are going to be using the improvement or indicator or whatever it is. Then they wonder "why didn't it take off?" Of course it didn't because you didn't ask the people who were going to be doing it what they thought.

Aligning KPI's to the organisational context

DoN1	We have a quality group within the hospital. They would identify some [KPI's]… Our infection control team are quite active, so if they noticed that we were getting line infections it would be brought to the corporate management team... [Suggestions for KPI's] can come from anybody...
DoN2	There has been a whole lot of work done here around trying to engage directly with nurses themselves around identifying the ones which are important to them. Probably those are the ones which we're finding a bit more difficulty in getting to understand at a local level, what is important to those particular teams, what's important to their services and their outcomes
DoN5	Myself and the medical director, based on the clinical strategy of the organisation...clinical divisions..., the external requirements from our commissioners and our regulators - we devise what are the key indicators we would look at
DoN6	A dialogue with the ward leaders about what's relevant and what's important… we do stop certain KPI's were we don't think they are relevant and they're not adding to quality improvement
DoN8	Some might be imposed, ... If we were non-compliant ... mandatory training for safeguarding, non-negotiable. That would be, "you're doing it".... in our quality strategy. Each organisation will have their own internal key performance indicators linked to outcomes or linked to the quality agenda. So those will be built up through the divisions, so for example, maternity would be asked to go away and come back and say what are the three things they want to improve in the next year.
SM2	Community is a challenge… the difficulty is collecting tangible evidence from them and records is not a good start, because they're in the patients' homes and you have to get access and that's laboursome to get out and do that. But there has to be other ways of collecting information, you can ask the patient and engage the patient and I think maybe just thinking a wee bit laterally
SM3	The staff have invited us in. There's a big [safety and quality] culture in this Trust and staff want to show that they're improving... So, we go into the areas and we will work with them... All my staff have been through the [QI] programme… We will then work on those issues as to how we're going to improve because we don't always want to tick the box we want to demonstrate the improvement
SM4	I don't think everyone knows all the KPI's that are collected. You've cancer ones, which have nursing ones in it. You have the generic ones which are like documentation and assessment and swallow screening. If you put them all together you'd probably couldn't get into this room
SM7	We've been approached by the assistant director for community, they're wanting to look at measuring what district nurses are doing because of the lack of KPI's.
CA2	I don't think there's any that we need to leave out because it's all focused on things that we should avoid happening.
CA3	I think they [clinical staff] probably think they are doing enough measuring of things at the minute cos sort of when you bring out a new initiative some of them are like, "not another audit" because things are tight with staffing levels
CA4	The challenges are around the number that we have to do. And so often there can be twenty a month for different ones and it's the time-consuming aspect of that
CA7	The ones that we get the most from are pressure ulcers and falls
CA8	Our education ones [KPI's] come from... Regionally…
CA8	I do feel that sometimes when they are set, perhaps the people on the shop floor don't fully understand the reason why they're set or see that they're applicable to what they do. And I think lots of people go with the assumption that there's a financial drive behind it and we've got to collect this because of that drive. Rather than really understanding some of the quality underneath it… and how it can influence the care that patients get from it
CM7	I don't know that we use them all [KPI's]… It's been altered in the years that I've worked here, the different data that we do collect. So I assume someone is looking at whether it's important to collect this data or not. It seems as if they've just added more [laughs], not that they've taken anything away.
CC3	Some of them are better taken on than others. Some of them are very difficult to capture the information. Recording, the amount of paper work that we have in community is just absolutely phenomenal and we're getting buried in its. Then you're asking nurses to go in and put things onto the dashboard, record MUST scores, put on these things every month. And…these things are all recorded somewhere else

Listening to those who matter

SM8	You're not allowed to fill it in for the lady. So if a lady's first language is not English then that makes it very difficult... they've got to do it themselves. Apparently you're not allowed to ask them for it. There's really strict rules around it and so that's why getting the 15% [feedback target] is really hard, because even if they've filled it in sometimes they might forget to put it in the box.
DoN1	There's a few [mechanisms for collecting patient experience] it's not the most developed. There's a couple of committees that have co-opted parents on every now and again to give their feedback. It isn't a standing practice that we've evolved yet.
DoN2	We have just appointed a [patient experience]... facilitator, and she will be going out directly with the teams around how to support them in this work.
DoN4	It's a paper questionnaire and its dependent on the nursing staff handing it out to patients...it's just something they forget to do. We only get about 10% of patients filling it in...
DoN5	Sometimes the narrative behind some of the indicators, that's very helpful... Mortality rate. Is there enough understanding of the end of life experience to help us not just count the coffins and see whether we've done harm, but that we've helped people have a good passing and helped families
SM2	The process... has a value in terms of being a measure of quality, but it didn't actually tell you what happened to the patient... It didn't say "well, you were very good at doing it, but the patient still died". Or "you were awful at doing it, but the patient actually lived".
SM4	We do not do this well. We have something… which is about generic experience in the acute or inpatient hospitals, but even at the diagnostic end… we don't capture patient's experience. We do in some places through our quality improvement teams but we don't systematically do that. We spend quite a lot of time on complaints as a proxy indicator for experience but we don't have the granularity of the specific care process, say you're a stroke patient
SM5	The ward managers end up with a report, tells them how many people have completed the return, how many would recommend and then all the comments are scanned in and they can see what people have written. Ward managers can see them before they're collected, so if someone's written something and you want to deal with it, nip it in the bud, they have the opportunity to do that.
SM7	When I've spoken to patients they've been more than happy to say the good, the bad and the ugly of their experience. And sometimes things can be rectified there and then. Patient stories I don't think are used as well as they could be… it can be quite labour intensive. As far as I know they're using the themes, an example being a member of the team took a patient's story... That's been fed back to the department and they're going to use it for educational purposes.
SM8	We have a "you said, we did" board… We also have the information on the [national] website where they can post things and then we would reply to it. And obviously then there's complaints and compliments, both formal and informal. Patient advocacy or even just a card on the ward. And then we work with our... service user group.
CA1	It's something that I want to do… we don't have an actual thing for them to fill out. We have done random, it was more hygiene related, that we would leave out maybe ten or ask ten parents about the hygiene, about the bins, about people hand washing... That's probably only about twice a year…
CA1	Some of the wards measure compliments and complaints… they're measuring like any cards received... is that an accurate measure because you could speak to people and it doesn't matter that they haven't physically given a card… And complaints... but then again it's not verbal complaints... [that] was all resolved, and never escalated. So what kind of complaints do you classify?
CA2	I think it might be more beneficial to get patients involved… there may be things that are blatantly obvious and staring us in the face to help us improve patient care that we can't see but patients can…
CA2	What this [person] may feel is beneficial for their relative may not be beneficial for everybody
CA6	We did put it in the tablets that patients take home with them, but we didn't get much response.
CA6	That's only as good as somebody's computer skills. If you've got an older person perhaps their relatives would do it, but they might not feel au fait with our current technology
CA8	Each department sets their own indicators, what they feel is pertinent to collect to understand the patients' experience... for example, in an outpatient setting "were you offered a chaperone for your examination?"... it helps the staff to see their performance from the patient perspective and not necessarily from the perspective that we set... And again that's put into the system live...
CM4	One of the aims was that you would increase the number of women satisfied with their care, but I don't know how you do that if you don't actually have meaningful information about the care that you are giving at the minute.

CM6	We collect them antenatally at 36 weeks to get a feedback from them about their community experience. They do one about labour, they do one about their in-patient post-natal, and then they do their post-natal as a whole. So we try and capture information four times
CM8	There are some patients that you will never make happy no matter what you do for them, and there are some where you have to do very little for them and they're so much appreciated. But I think if we don't get that feedback then we're never going to know if we're not fulfilling the needs of the patients
CC2	I have had to say to the girls “don’t be selective who you give your questionnaire to. You can’t pick the patient who thinks you’re lovely. I want you to leave the questionnaire for everybody who’s there, including the families if they chose to fill it in”. You can’t be seen to skew information
CC4	When I have a student, they have to ask a service user [about] the care they have given, or I’m to ask on their behalf. It’s hard for a lot of the patients to say anything negative cos we’re in there on an ongoing basis. So, they don’t often feedback after the episode of care because maybe they’ve died.
CC7	[Do you collect your patients' experience?] No we don't, to be quite honest. We may document in the unified assessment nursing notes that we have a patient's views or... how they've expressed things to us. But again it doesn't go any further... we collect, which sounds silly, the thank you cards

Establishing ownership and engaging staff

DoN2	We’re trying to get a bit more flexibility in our system to allow ward managers to make more decisions at a local level because they are scundered around the volume of recording that they have to do, and I think we can be a bit more flexible around that
CC8	For community midwifery there is five [KPI’s]… [performance team] pull the data from everything that we document electronically. We don't personally collect any data as the team leaders. We get an email to say "this needs to be done, that needs to be done, this needs to be looked at".
DoN1	The people who are involved in the direct collection of their information would be the clinical nurse managers in the ward area
DoN1	We have set up specific… meetings... with the senior assistant directors of nursing... I also meet with Education, Research, Quality and the Heads of Department. So you’d have all of the clinical nurse managers… It’s about explaining to them what their responsibility is in achieving these targets. Why these targets keep our patients safe, why it gives them good quality care and the importance that they need to take back in their message… It’s about connecting for them that they can see that information is utilised. I think you can get caught up in the ‘tick box’, and that’s not what you want to do.
DoN2	It’s the lead nurse in the ward who owns this information she’ll have help, there’s lead nurses, there’s governance co-ordinators [who have a] practice development background
DoN3	If you have an idea and you want to come forward to get some thoughts on how you might do it, then those [staff] will point you in the right direction.... That will then impact on what you would take forward in your local KPI’s and how you’ll do it…[They] learn quality improvement methodologies to help them.
DoN4	People like a KPI if they’re doing well or they’ve created it themselves so there’s a bit of ownership around it… So engage people early in the process around why are we developing this KPI. It is not a punitive thing... it’ll tell us something about performance, about patient experience
DoN5	We have QI training internally, we have a programme where people can be coached by QI facilitator, and we have quite a lot of support for anyone who wants to do a project of improvement.
DoN6	A lot of people were initially quite uncomfortable [reviewing complaints in a professional forum] but it’s not about exposing people, it’s about making sure that we share all of the data we hold
SM2	It is comprehensive in that it is multi-disciplinary and that’s a challenge for some of the community mental health nurses to try and identify [KPI’s]. It’s not even that they can’t do it, I think they just need the space and the time to do it. Nobody’s asked them before [laughs], and they haven’t been given… the time to kinda tease out the challenge because they’re too busy doing their job.
SM3	We’ll identify key people as champions.
SM3	[Staff nurses] also do the bundles on [computer system] to give them ownership, to get them to understand the meaning of why we do this, why we get the baseline audits, why are we sending this information in, why do we have to report this to the [national organisation]. So they can see improvement. ... Why is it just the responsibility of the [clinical managers]? It’s the [staff nurses] who are out there implementing the skin bundle for the Sister to go into her office and tick
SM4	I lived through this response in my early years which was “not meeting this KPI what’s your action plan” [bangs table]. [Instead of] why are we not meeting it… what’s the key things we know or we theorise or we expect if we do will lead to an improvement around this. Let’s test it on one patient, five patients. Has it led to an improvement, no, fine. Let’s try something else

SM6	Staff ability to use them [a challenge]... not just with KPI's but we have some ward managers and matrons who are very good and take notice of them, some of them who are a little bit more blasé and need more direction in terms of how they use their KPI's.
SM6	Every month they get updated… we can see trends on graphs, it's very easy to navigate around our dashboards. I found them incredibly helpful… because some of the graphs that you produce for the staff it's very easy for them to see where we're going... You don't have to go into immense detail, some of the more junior nurses don't have that understanding
SM6	There's a big sort of competition in that they think, "oh gosh, there's another ward that's doing better than me". And this is what it's sort of brought out, that competitive nature, thinking, "gosh, we're on a downward spiral here, we've had three months in the red, how can we rectify this?"
SM8	It's the managers who go to the quality meeting and then the managers then hold their team meetings. They would share that information or not, as the case may be depending on what's going on and what they think is important. Cause although we know that the start of the process occurs, whether the full cascade occurs is always subject to interpretation, isn't it?
CA1	I had started talking about [care bundles] with the girls "we're going to bring these in, the safety of the lines and the line infection and whatever". And the reaction was kinda of [makes a sighing noise] "another piece of paper, like again it's to tick more boxes, we're ticking more boxes every day"
CA1	I'd picked out a few people to help, you know promote it, people that are interested in it. Some of the people… would always complain about whatever. It actually worked because she was delighted to be involved... she went on afterwards to [something else].
CA3	The only challenges are trying to get ownership and trying to, when resources are low on the ward, to keep the momentum going and get the staff to do them and understand the importance of it
CA3	If we've any new initiative coming out like that we would try and invite the people along to our monthly sisters meeting so the sisters can ask questions, what they feel is wrong, what's right and if it's any benefit or if there's an easier way to do it
CA4	[Data collection is done by yourself?] yeah... I think they could be more involved... I don't think any of these things should be person specific because if they go off sick then you're going to have to train someone else. So maybe it should be rotating around staff and getting more aware of what we're collecting and the value of that.
CA5	They are not fully aware of KPI's but senior member of the staff, whenever I do an audit I explain it to them. Like my senior staff nurse… so they understand what I am doing, go around looking at specific things. Because these are things… they could help me prevent.
CA6	We do tend to print them out because a number of staff don't go on the internet or don't always have the time because they're busy. And equally sometimes if you said to staff, "what's a KPI?" they perhaps wouldn't tell you, but if you said, "oh, what do you do about your cannulation figures? What do you do about your C. Diff figures?" they'd then probably give you a ream of information....
CA6	Every month we have a floor meeting. And everything gets discussed between the whole of the [service]. It's quite good because I'm part of the other wards as well so there's a lot of learning. What we've taken from our ward we also take it to the floor meetings so everybody can be aware. And equally it's raised… if there's something that we feel the whole Trust can learn from
CA7	How did I get my knowledge? I suppose they just appear there, the plans to use really [laughs]. Obviously the Trust introduces another [KPI] and then we follow on I suppose
CA7	[When asked about opportunities for shared learning] not that I know of that we share as a ward. I mean obviously they have matron's meetings and maybe they talk about these things
CA8	They [staff nurses] understand it when I explain to them… sometimes they need that explanation beneath it as to why we're measured on it... why is it important that we engage in that… I've people volunteering to be involved and they become more collaborative when you have the time to explain
CM2	We've had a [development programme] that was implemented… It was looking at what systems we have in place and about stream-lining them, and maybe looking at what way we're providing care. How to do away with stuff that we don't need to be doing. It was about getting the girls that are working on the floor involved, getting everybody talking around a table to discuss… issues and what they needed to address to improve care. It was also aimed at improving situations for staff, making them feel that they had more input into the service that they were providing, trying to retain staff.
CM3	I do think clinical staff need to be involved in it… what they think, how they can measure their performance... I think a lot of these organisations make decisions without involving clinical staff.
CA6	Thankfully, the information is collated centrally… Everybody gets fed up if you had ten audits to complete plus a wealth of forms... you could see that it' d soon impact on your workload and then you wouldn't be able to move on and action plan and think about what you can do to improve, cause realistically it's the improve, we all want to improve.

CM5	Breastfeeding's a hot topic at the moment… but we're just getting a lot of emails like "you need to do this, this is our" rather than a discussion, how that improves patient care. We know... breastfeeding's important. Where they're getting statistics and saying "you have to", "our breastfeeding rates are 90%, it must be better" helps improve that, I'm not a believer in that approach.
CM6	Not everybody knows the evidence… That's where I think we need to move to, that yes it's a KPI but it's understanding the underpinning behind it, that it can make a difference to that mum and her baby. That's what midwives would latch on to because that's what they want… to give the best evidence-based care. But I think some people see the monitoring as something 'they' do, isn't it?
CM7	My personal view is that it is a bit of an exercise because I've never really been formally introduced to it… I was just told that "part of your role is you fill this in on a daily basis, and then on a monthly basis". I think that's like an organisational issue though, that it was never really introduced properly.
CM8	My [manager]… she done a lot of training with me around the KPI's, the meanings of them, how we collect all the data. Because that's something else you don't think about, how all the data's collected,
CC2	My previous manager wouldn't have included us in all the decision-making that I'm now involved in. I do think some of it is how forward thinking your manager is. That has a lot to do with it. Are we more isolated in the community... have monthly meetings but you may not see your colleague again.
CC3	It's usually a couple of people who get together to try and take these things forward… I do think that the nurses feel very strongly that they need to be involved at an early stage with [KPI's] because they don't want somebody to be coming out with another piece of paper that gives them more paperwork to fill in. If it's going to be additional work there needs to be a point, there needs to be a benefit to it.
CC4	There are quality departments. District nursing haven't had a huge engagement with them that I know

Checks and balances

DoN1	[Systems to manage data] they're slim and none, to be perfectly honest. But we are developing business informatics now... dashboards and that kind of thing
CC3	All your information that you would need for your KPI's is already collected in that information but then we have to transfer it then into another system.
CM3	I'm hesitating cos I'm wondering should these go onto this, and I'm thinking I don't know if we have any more room [identifies that KPI's are spread across two different IT databases].
DoN1	[Hand hygiene assurance] it's checking when you're out on the wards that the people are actually using the correct technique, not just looking at the number on the board. That we are achieving our goals in terms of, okay 96 per cent of our staff are trained, but how many of them are <u>actually</u> compliant with the practice?
DoN3	We need to develop more peer-to-peer review… A regional audit… generated a lower level of compliance than our internal data had been showing us... That's concerning because if part of this is about assurance we could be lulling ourselves into a false sense of security
DoN4	Passing that responsibly back to people in the line to say, 'you are responsible for the delivery of this target, for the actions… you need to provide us with the narrative that says what you're doing to mitigate... Although performance sits against me as an organisation, that's how we deal with it
DoN5	If you have an issue that is seemingly different to information elsewhere about the service, then you triangulate that data, you dig a bit deeper and... you have that conversation. It needs to be triangulated with soft intelligence. Because it's hard data, isn't it, KPI's
SM2	One of the significant findings was the amount of elements that were being recorded by the amount of people which made the robustness of the outcomes... questioned because there was so many people doing it, and so many interpretations, and so many pieces of paper and they were recording the same thing on three different pieces of paper and you're thinking "well, which one do we take?"
SM2	We were always conscious that we were only auditing the written record. We didn't do any observations of practice. So even though the record mightn't have been... as good as it should have been, the outcomes for the patients were good. But we didn't observe them doing it and that was probably a limitation... Cos we only ever did it by reviewing records.
SM3	I got very concerned because nearly every ward was submitting… the skin bundle one, nearly 100%. Nobody can be 100% all the time. We found out people were translating the questions differently… they didn't read the small print…
SM4	We get gaming and it's not because it's not a useful measure, but we don't measure all the other things. So the number of people who are admitted because they just need to meet the target.... and it's just this massive light that gets shone on you. We don't segment our patients. So that four-hour wait is for everybody but sometimes that much more important if you're a frail elderly person.

SM5	We've got specific people to do it... it's not a different person every time so you don't get, variations. They're collecting it from systems... from things that IT record, from Datix... I guess it's probably an advantage because if you get a massive anomaly they would probably go back in to question that.
SM7	I think there's danger of aggregating because would you always see the outliers?
SM8	The organisation is starting to realise, what we've been saying, that one impacts on the other so you can make one go up but in turn something else will falter, and it's keeping them all in balance. Have some of them been set too unrealistic? Is 100% one-to-one care in labour the beast of all beasts that then prevents us being able to do 90% on a 30-minute triage, who says which is most important?
CA3	There's a girl, a quality officer, would come round and do like a revalidation audit just to make sure that we're scoring sort of similar
CA4	You've watched how he's collected that, what we're doing with it, someone might have explained the system to you, you know. But I think training would be good, proper training. And as I say maybe someone who is out with you clinical then doing the data collection for you
CA6	For example, one of our indicators is falls with harm. The very nature of the fact they've fallen, they'll have a bruise or they may have cut their arm. It's how you perhaps perceive harm because initially… you tend to think of harm as kind of a fracture, a head injury, but the actual indicator for that pathway is any harm. I think it'd be good to revisit it… Sometimes with the indicator, you can see it kind of being so high... it can kind of swallow up the meaning. Because there's a high percentage of people that do get a bruise... to separate it and say these are severe harms
CC3	We're only asked to feedback on two clients and I would say people probably feedback on the positive aspects than the negative ones… the ones that they have actually completed the proper documentation for rather than the ones that aren't

Closing the loop

DoN2	One of the things we're trying to do is ensure that mealtimes are protected... You have to engage with your multi-disciplinary team around that. You're going to be... saying to doctors "well I'm sorry, you can't come in and do a ward round when there mealtime", or clergy "sorry, give the patient 15 minutes so they can have peace to eat their meal".
DoN3	[A ward] were very conscious of the frequency with which patients were being re-cannulated. And they wanted to do a piece of work around that. So, using the quality improvement methodology, they... looked at their data in relation to their baseline, looked at PDSA small cycles of change, looked at what the improvement was as a result of that first change, built on that, and are measuring their KPI specifically around that aspect, and using that to drive their quality improvement
DoN6	We added a lot of the KPI's… because we had a number of failure to rescue events that resulted in either harm or mortality. We had a big conversation in the organisation for [almost a year] about what they meant, why we were achieving them, what the impact would be, what we were going to do. Also what we would track to show performance improvement and what I needed from the team
SM4	One of the big issues is we sit KPI's within a culture that is punitive rather than improvement focused. It's binary, you haven't met it you haven't met it, it's either yes or no. Instead of saying "talk me through that, what does that look like, how does that fit with the other process of care you've got in place", what happens is we chase the indicator instead of understanding why the indicator is there, which is about improving care in this context…
SM6	[Staff turnover KPI] in that area their sickness is increasing because the staff are so stressed. We saw this coming... with the dashboard so that's why... things have been put in place to... risk assessments to maintain some safety there. ...we haven't rectified it, but we've tried to make it a little bit easier for the nurses so that we keep the good neuro nurses that are there, they don't completely burn out.
SM6	Nurses and patients were switching lights off in bays because they couldn't sleep. We had a big piece of work because we thought well that's not safe, we can't have lights off… We did see an increase in our complaints about patients saying, "It's just too bright at night, we can't sleep"... So we have just... put some dimmer lights in.... I'm hoping to see a reduction in that now...
CA2	We have a mini staff meeting every week. And we would discuss [incidents] and I also send it out in a global email to all my staff for learning. If something has happened, if they have missed a medication, to go through it with them, make sure they realise the importance of it, see what happened, why and encourage them to reflect on it and use the reflection as learning.

CA5	It's screening and saying this patient has got cognitive impairment and what care should be followed up by the GP, how it will affect care planning, and involvement of the next of kin... We have got a dementia nurse in post now. We have a dedicated dementia OT. We have alerts in real time... The 'This Is Me' passport is being utilised and there are champions in the ward who will fill them in on behalf of their relatives. We engage the next of kin, how a particular behaviour of a dementia patient is manifest and then how can we deal with it
CM6	You say to your ladies, "I get 15 minutes for your appointment. If you don't have any problems and we don't talk about anything that you're worried about, we'll fill the 15 minutes. If you want as long as you can have with me, my clinic will over-run. Please bring a book with you and please don't be cross with me if your appointment slot runs late," and they go, "Yeah, that's fine". Then they [know] ... or they'd ring and say, "Is [midwife] on time?"... They should have longer… screening, smoking, breastfeeding, if we're not imparting that information to women, how do they know choices…You can't do that and test someone's urine, do their blood pressure, have a feel of their tummy, listen to the baby, ask them about their emotional well-being in 15mins